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**THE HEALTH SERVICES OF MALAWI**

**A Thesis presented for consideration for the  
degree of Doctor of Medicine of the University  
of Glasgow,**

**by**

**David J.D.Stevenson,  
M.A.,M.B.,Ch.B.,D.P.H.,D.T.M.&H.**

**In the hope that the future will bring even closer  
links of friendship between the peoples of Scotland  
and of Malawi.**

**December 1964**

**45 Buchanan drive,  
Bearsden,  
by Glasgow,  
Scotland.  
(Bearsden 5106).**



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Nkhota-kota. 28th September 1960.

I took this picture at a public meeting at the first annual congress of the Malawi Congress Party - which now forms the government of the country. The crowd are acclaiming a resolution.

The last of the detained Nationalist leaders, from the arrests made in the Emergency of March 3rd 1959, were released at this meeting, including Mr Henry Masauko Chipembere.

Dr Banda, addressing the meeting, said that he would be failing in his duty if he did not mention hard work. People with a few years schooling should not feel that they must have white collar jobs, as clerks or teachers. If people with University degrees in Britain and America could be farmers, people with Standard III or IV in Malawi could be farmers. (At that time Standard IV was equivalent to about six years primary education).

Can this enthusiasm be maintained now that self-government has been obtained, and channelled into constructive energy for National development rather than into the destructive energy of frustration and discontent at too slow a pace of advance ?



The General List of Contents follows the picture on page VIIa.

## INTRODUCTION

The people of Malawi were described to me, by an African doctor from Bechuanaland, as "The Scots of Africa". Among the reasons for this are the strong Scottish influence on the country, from the days of Dr Livingstone onwards, and the varied and attractive scenery, with mountains and lakes, often reminiscent of Scotland. While Malawi has been thought a poor country, she has in fact a considerable potential for development. With a prolific population, and a lack of opportunities at home, perhaps her biggest export up to now has been people - and their skills and working capacity.

Now the Malawis must try to use their natural resources and human skills, with such foreign aid and advice as is available, to provide a more satisfying life in Malawi for the ever increasing population - and its greater demands as it comes to realise what people have in other parts of the World.

I was invited, in 1958, to go to Nyasaland (as Malawi then was) as Medical Officer to the (Episcopalian or Anglican) Diocese of Nyasaland. My work involved a lot of travelling between scattered units (see the map on page III), and visits to other centres for discussions with representatives of the government and of other Churches and charitable bodies. Thus I came to get a general impression of the problems of the country as a whole - the health problems in particular.



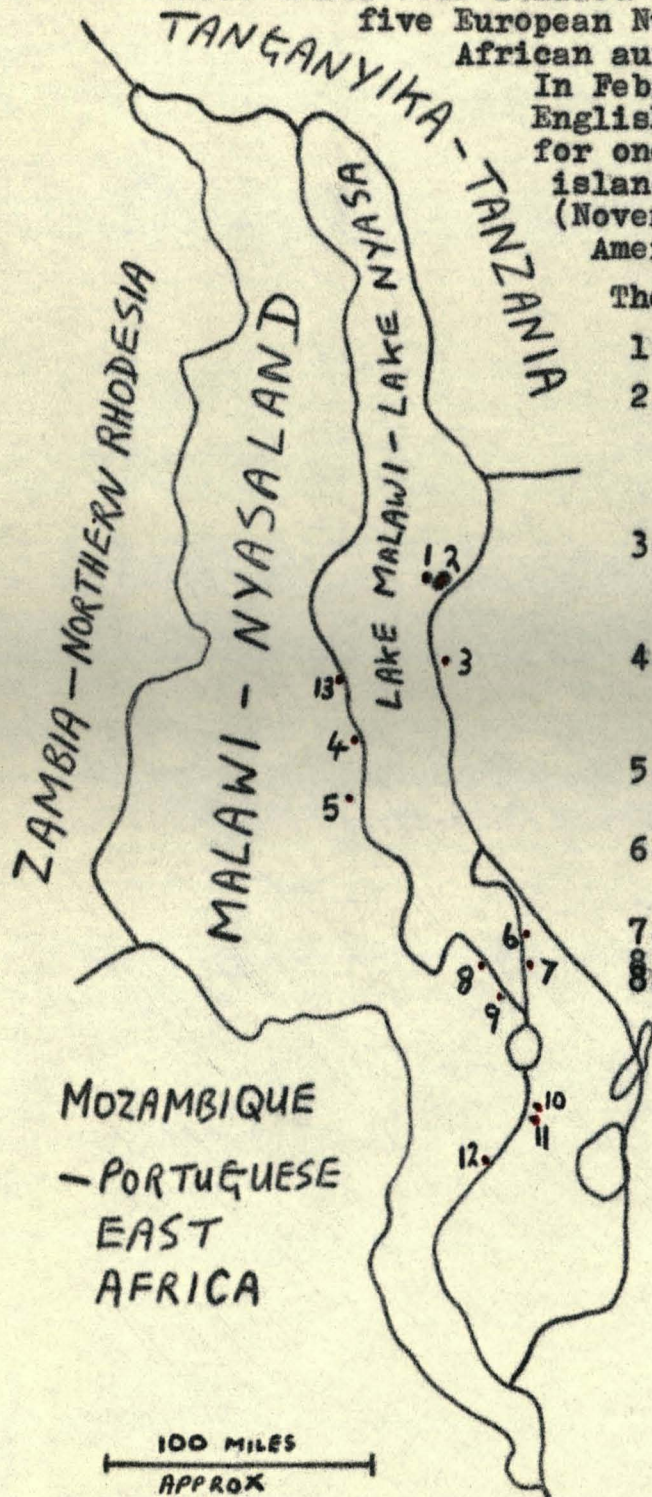
# MEDICAL UNITS OF THE DIOCESE OF MALAWI (NYASALAND)

(See the map on page 5 for major place names).

For most of the time from November 1958 to August 1963 these units were staffed by one doctor (myself), four or five European Nursing Sisters and about 80 African auxiliaries, trained and in training. In February 1962 Dr Mumford, a retired English General Practitioner, took charge, for one tour, of the Likoma and Chizumulu island units. The thirteen units are now (November 1964) served by three American doctors.

The units, numbered on this map, are :

1. Chizumulu Island - Dispensary.
2. Likoma Island - 40 bed general hospital. A Medical Assistant Training School there closed in 1963.
3. Msumba - General hospital in Mozambique, transferred to the Diocese of Lebombo in August 1959.
4. Nkhota-kota - 33 bed midwifery hospital and midwives training school. General out-patients.
5. Cididi - Dispensary, general and midwifery out-patients.
6. Biti Kalanje Leprosy Village - 25 in-patients.
7. Malindi - General hospital, 38 beds.
8. Mkope Hill - Dispensary, now expanded to a small hospital.
9. Mpondas Hospital - 12 maternity beds. Leprosy and general out-patients.
10. Likwenu - 35 bed general hosp.
11. Likwenu Leprosarium - accommodation for 130 in-patients. Three subsidiary out-patient clinics.
12. Matope - 14 bed general hospital.
13. Liwaladzi - clinic run by a Priest qualified as a Medical Assistant (see page 31).





In 1963 I returned to Glasgow for the Diploma in Public Health course. Reading about the development of social welfare in Scotland up to the beginning of this century (Ferguson, 1948, 1958), I was struck by resemblances to the state of affairs in Malawi.

Too close a parallel cannot be drawn. It is unjustifiable to take one date and say "Malawi now is at the stage of Scotland in 1840".

Health services in Nyasaland early in this century could perhaps be compared to those in Scotland before the Reformation, when such social and medical services as there were came largely from the Church. The rise of the State in Malawi has not destroyed the social work of the Churches, as the Reformation did that of the monasteries in some European countries, but it has removed their monopoly. The State has now taken over the major part of the educational system of the country - but continues to build on the foundations laid by the Churches (at whose schools all the present national leaders were educated). In the field of health the Churches still make a major contribution.

Much of the health problem in Malawi to-day stems from inadequate sanitation and water supplies, particularly from the habit of indiscriminate defecation in the countryside. But when the sturdy tenements of Glasgow were being built 100 years ago - and seen as a great advance on former housing standards - it was not thought necessary to provide an inside lavatory for each house. By having plenty of countryside around their huts, the people of Malawi have avoided the peculiar filth and sordidness which can arise in a crowded city. In Western Europe I have (in 1955) been in parts of Brittany where a normal place to defecate was in the shade of a convenient hedge, and where women were to be seen, as in Africa, washing clothes in the edge of the river.



Old Scottish laws provided for the flesh of wild beasts found dead or wounded, and of pork or salmon found to be corrupt in the market, to be given to the lepers (Ferguson, 1948, page 257). In the light of this it is of interest that leprosy patients in Malawi appear willing to eat foods, such as baboon meat, which are refused by most other people. A possible background to this (in Malawi) is that certain food taboos may be associated with a fear of leprosy occurring if they are broken - a person who already has leprosy therefore may have no more to fear from that taboo. But the stringent Scottish laws for the seclusion of lepers find little parallel in Malawi.

In the 16th century families infected with plague, in Edinburgh, were obliged to move to hastily erected huts on the Burgh Muir (Ferguson, 1948, page 258), and similar measures were taken at other Scots towns. On being called to see a child with smallpox, at a mountain village in Malawi, I found that a grass hut had been erected by the villagers, for him and those attending him, outside the village - a similar precaution.

Scotland had a considerable problem in the past with starving paupers, and vagabonds, as the history of our measures for the care and relief of the poor testify. We still have problems of unemployment and poverty. While Malawi has many poor people, most individuals have a definite place in the community and obtain food and shelter (if sometimes rather inadequate by our standards) as a natural right.

The idea of communal and family responsibility can have its disadvantages - as when all uncles must be consulted before an urgent surgical operation can be performed on a child, and it may deter people from being thrifty since their savings will be demanded by their relatives, but it has great advantages in ensuring a measure of social security for each individual.

Travellers naturally receive a night's lodging and a meal, in the villages, as used to be the case in the Scottish Highlands.



The growth of the urban population endangers these traditional safeguards. Many young men, partly educated, migrate to the towns seeking work other than subsistence farming. A large proportion fail to find work. They are away from their homes and families, and traditional hospitality may not be the same in the towns as in the countryside - the number of unemployed and homeless young men arriving in the towns would put it under considerable strain. Unless timely provision is made to prevent it, Malawi may yet suffer from "Sturdy Vagabonds" as Scotland did.

While more industries are needed to use constructively the energies of these young people, it is also necessary to persuade them that agriculture is a worthwhile occupation - and that, rather than despise it, they should be ready to use their education to make themselves better and more productive farmers.

When I came to do the Diploma in Public Health course, I was asked to write as a dissertation a Blueprint for the Development of Health Services in Malawi. This I have now developed into the present thesis.

I have tried to examine the health problems of Malawi, and how they can best be met within the resources likely to be available. My suggestions are made in the realisation that there are other viewpoints on and other solutions to the problems discussed. I hope that some of the ideas put forward may be of interest to those planning the health services of Malawi. (Dr Banda, the Prime Minister and - at that time - Minister of Health, accepted a copy of the original dissertation).

I have divided the thesis into three main sections :

1. The Historical and Recent Background.
2. Comments on Some Specific Problems.
3. A Suggested Outline for Future Health Services.

I have added some appendices, the most important of which is Appendix I, an examination of how other African countries have met, or propose to meet, their health problems.



I have concluded that measures to raise the standard of education, and the general standard of living, are of more importance than more hospitals in improving the health of the nation. Public health education and preventive medicine are of prime importance, but curative medicine must also be offered both for its value to the individual and to persuade the public to accept the educational and preventive services. The public require proof that health educators know what they are talking about. Efficient curative services can provide that proof.

While there are obvious differences between Malawis and Scots, basically human beings and human problems seem surprisingly similar wherever one is. Persuading people to change their habits and ways of thought and life is as difficult in Malawi as in Scotland - but probably no more so.





Mkope Hill, The Old Dispensary. September 1959.



Mkope Hill, The New Dispensary, and Womens' Ward. August 1963.

See the text with the pictures on pages 159a, b and c. In the lower picture can be seen, on the left, the grass walls and roof of the pit latrines. The conical-trunked tree to the right of this is a baobab. The circular shelter in front of the ward is a temporary kitchen. To the right are mango trees. Note the covered space between the ward and the dispensary.



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## ACKNOWLEDGEMENTS

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I thank my mother for her encouragement and support.

## NOTES ON TERMINOLOGY AND REFERENCES

There is some confusion in terminology due to similar grades of staff being referred to by different names, and different grades by the same name, at different periods and in different countries. Thus the staff now known as Health Assistants have at varying times been called Sanitary Inspectors, Health Inspectors and Sanitary Assistants. I have used the titles given in the publication being referred to, or in use at the period referred to, and hope that the context will make the meanings clear.

References quoted thus - (Gelfand, 1960), Fox (1964) - in the text are listed on pages 180 to 184, as are references given more fully in the text. Dates of issues of Malawi newspapers, from which frequent quotations are made, are given only in the text.



## SECTION ONE

### THE HISTORICAL AND RECENT BACKGROUND

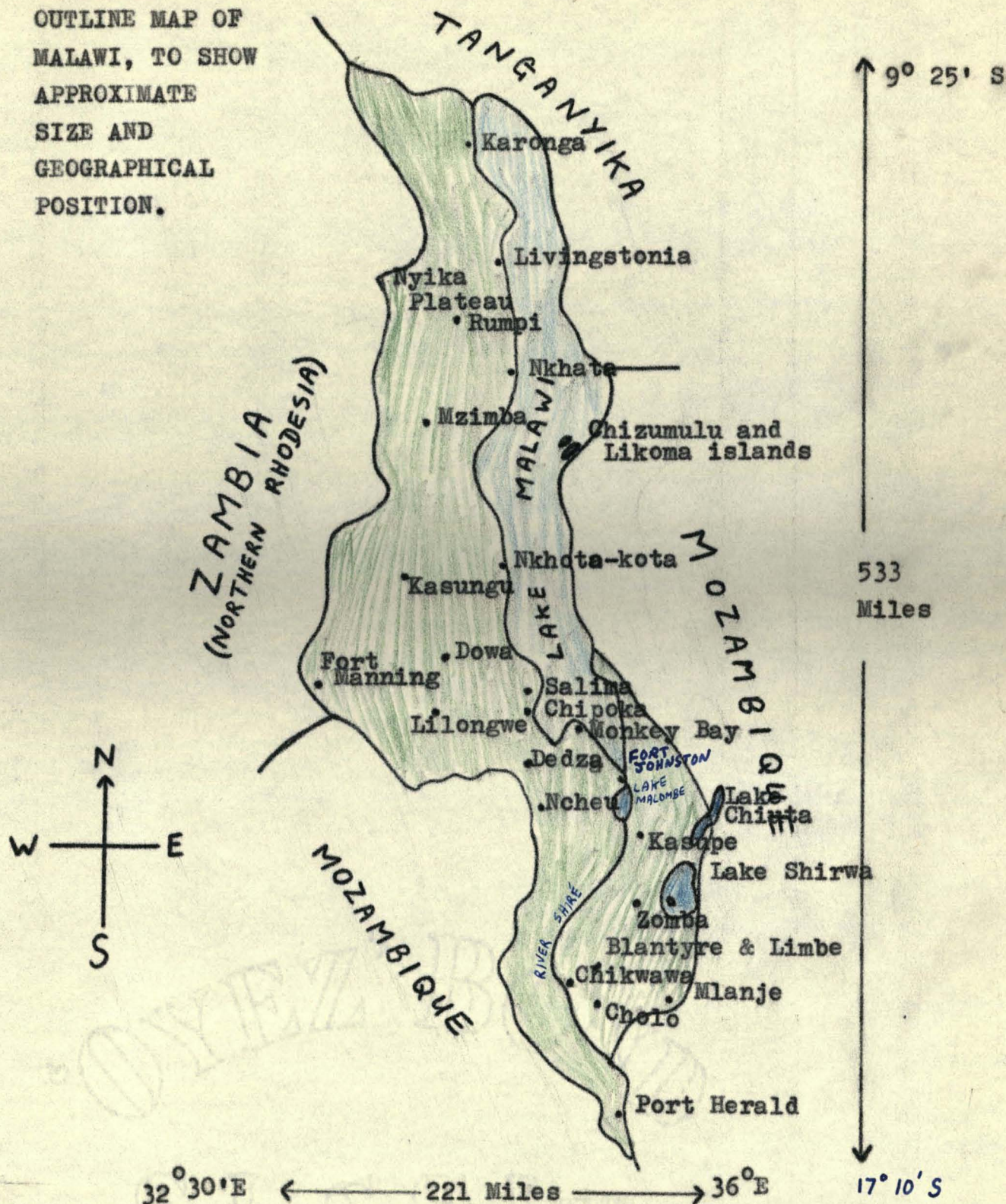


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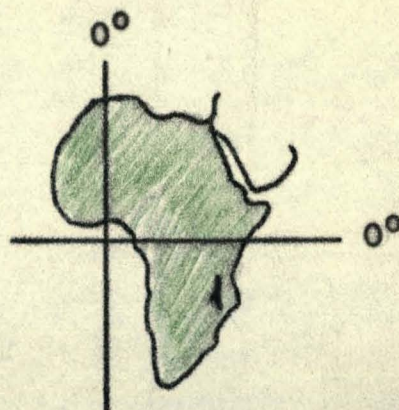


OUTLINE MAP OF  
MALAWI, TO SHOW  
APPROXIMATE  
SIZE AND  
GEOGRAPHICAL  
POSITION.





Position of Malawi marked, in black, on outline of Africa, with Greenwich Meridian, and Equator.



A number of place names have been altered since independence, and it is likely that others will also be changed, or revert to earlier or more popular forms.

Thus the name Malawi has replaced Nyasaland,

Lake Malawi	=	Lake Nyasa,
Nkhata	=	Nkata Bay,
Nkhota-kota	=	Kota Kota.

Approximate heights above sea level of some places named on the map on page 5 :

Port Herald	125 ft
Lake Malawi	1550 ft
Karonga	1560 ft
Zomba town	2900 ft
Lilongwe 3500	3500 ft
Blantyre-Limbe	3600 ft
Mzimba	4445 ft
Zomba Mountain	6832 ft
Nyika Plateau	7000 ft
Mlanje Mountain	9863 ft



## MALAWI

This Central African country has an area of about 45,747 square miles, 36,481 square miles being land, the rest lake and river. The first human inhabitants were probably the Bushmen, who have left some rock paintings. Later it was occupied by the African (Bantu) tribes who form most of its population to-day. In 1546 "Lake Maravi" appeared on Portuguese maps of Africa, and in 1667 there were Portuguese references to the ancient Empire of Malawi. Arabs visited the country, from the coast, and in 1616 Jasper Bocarro travelled through the Southern region. Dr David Livingstone reached it in 1859, and called it Nyasaland - from the Yao word "Nyasa", meaning "Lake". It was proclaimed a British Protectorate in 1892, under the Foreign Office, with Sir Harry Johnston as Commissioner and Consul General. In 1904 control passed to the Colonial Office. For a time it was referred to as the British Central Africa Protectorate, but later it was again called Nyasaland. From 1953 to 1963 it was incorporated, unwillingly, in a Federation with Northern and Southern Rhodesia. In 1958 Dr Banda, who later became Prime Minister, returned to the country to lead the movement for independence. The Federation was dissolved on 31st December 1963, and on 6th July 1964 the Nyasaland Protectorate became an independent state in the British Commonwealth under the ancient name of Malawi.

The country is administratively divided into Northern, Central and Southern Regions, which are in turn divided into Districts - each of which has a Government Agent (formerly District Commissioner) and an elected District Council. The municipalities of Blantyre-Limbex, Zomba and Lilongwe have Municipal or Town Councils. Zomba is the capital, and seat of government, but it has now been announced that a new capital is to be built at Lilongwe - Zomba becoming the site for a University by way of compensation. The inhabited islands of Likoma and Chisumulu are administratively in the Nkhata District of the Northern Region.





In a typical village.

The picture was taken about 1962, but apart from the bucket and the style of the childrens' clothes similar pictures could have been taken any time in the past 50 years, and probably much longer. To the right is a maize store, woven as a cylinder of bamboo strips - and roofed with grass. It is raised off the ground. On the ground is a pile of maize cobs. The other buildings are dwelling houses. Behind most of these are enclosures, fenced in with a screen of grass and poles (a 'kusele'). Part of one of these, with clothes hanging on it to air or dry, can be seen behind the maize store. In the background, behind the small round hut, can be seen a better house with a neatly thatched roof and a well made kusele fence. The walls of these houses are of mud plastered on a framework of poles ("wattle and daub"). In some areas better houses are built of sun dried mud bricks.



## Population.

Though there are no reliable population figures, the following estimates indicate population growth:

	African	European	Asian and Coloured	Total
1904-5	923,500	606	325	924,531
1929	1,135,945	1,936	1,117	1,138,998
1934				1,600,000
1962	2,930,000	9,200	12,500	2,951,700

In 1964, for the first electoral roll with Universal Adult Suffrage, a total of 1,871,170 adults registered as voters. It seems likely that the total population is in fact nearer four million than three, and for the purposes of this thesis I shall regard it as three and a half million. The infant mortality rate is unknown - perhaps rather over 200 per 1000. The death rate is probably falling, the population is certainly increasing.

Most of the people live in villages, of varying size, scattered throughout the country. Some mountain areas are almost devoid of population. Blantyre-Limbe is the largest town, with an estimated population of 300,000 in 1958 - and considerable growth since then. Zomba had an estimated population of 7500 in 1961, and Lilongwe is rather larger than Zomba .

Most people are subsistence farmers, (and fishermen around the lakes), producing their own food and building their own houses. A great increase in the amount of education, especially secondary school education, is now taking place, and the country appears to be starting a rapid advance in all fields. The budget is limited, however, and the importance is appreciated of planning the advance to give the people the best possible return for their money and effort, and to maintain enthusiasm.





Traditional houses near Likwenu, August 1960.

The top picture is of the framework of a new square house. It is made entirely of local materials - poles from trees and bamboos, tied together with strips of bark. The walls will be completed with mud, and the roof with thatch.

The lower picture shows a round house, not so substantial - but built in basically the same manner.

While villages are common, in some areas houses are scattered in ones and twos - though rarely very far from villages or other houses.



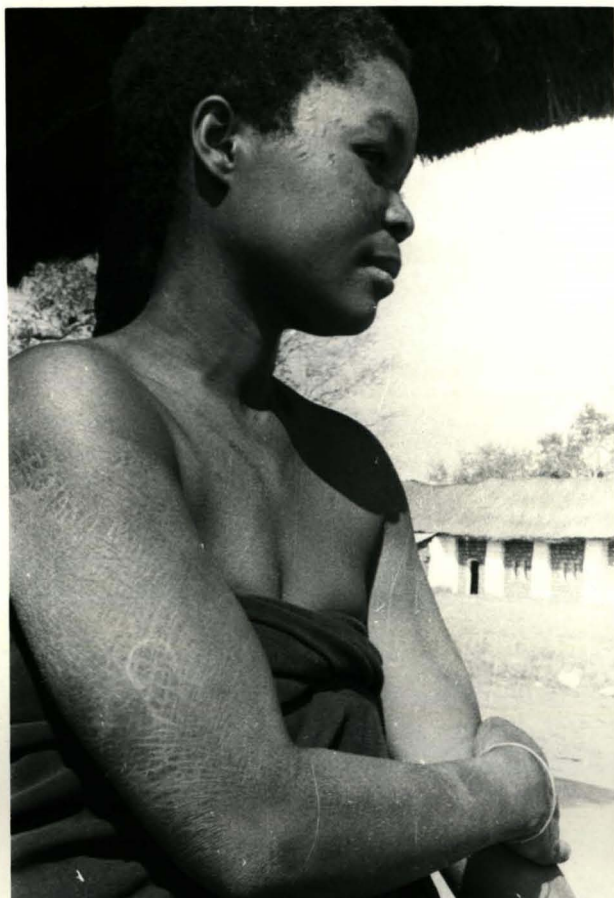
## Climate.

Temperature and humidity vary with season and altitude, but for most of the year the climate is pleasant throughout most of the country. In low lying areas it can be unpleasantly hot for a month or two before the rains. Rainfall occurs mainly from November or December to April or May, and varies from 28 inches per year at Port Herald to 100 inches per year on Mlanje Mountain. During the rains many roads become difficult to use, some impassable.

Seasonal effects of climate on health include an increased number of mosquitoes in the rainy season, causing an increased nuisance from their bites. In low lying districts there are enough anopheline mosquitoes throughout the year to ensure sufficiently frequent re-infection of everybody with malaria for increased numbers of mosquitoes to make no difference to the effective transmission of that disease. In higher districts there may be fewer anopheline mosquitoes. In the wet season faeces, containing hookworm ova, deposited on wet earth in gardens, may give rise to fresh hookworm infections. In the dry season faeces deposited on dry earth will soon dry up, so that the hookworm ova cannot develop into infective larvae. In the season when mangoes are ripe (October to February - according to elevation), multitudes of flies appear and spread conjunctivitis among young children. No doubt useful stores of vitamin A are laid down in the livers of those who eat large numbers of mangoes.

There are seasonal variations in the amount of food available, and weather conditions may greatly affect the quantity of food harvested, and therefore the nutrition of the population. During the hoeing season (the early rains) most people are occupied in the fields, and unwilling to spare time to bring themselves or their children, if ill, to hospital for treatment.





African traditional medicine.

Matope Hospital, 30th August 1960.

This girl has had treatment with traditional medicine for a skin disease on her arm - probably a patch of tuberculoid leprosy. The patch has been replaced by rough, dry, scaly, slightly scarred skin - a typical appearance following such treatment. Diagnosis of what was there before the treatment can be very difficult. On her temple can be seen small scars such as are left by the incisions made to relieve pain (see page 10). These may (in this case) have been made therapeutically, or may be intended to be decorative.



Traditional medicine, and beliefs and customs affecting health.

David Livingstone showed respect towards the African doctors, and advised others not to ride roughshod over their opinions (Gelfand, 1960). Up to the present time most of the population has not had ready access to modern scientific medicine, so has had to rely on local remedies. For the many patients who feel in need of attention, but do not have a specific disease requiring a specific drug to cure it, the usually harmless herbal remedy of the village medicine man (singanga) is no doubt as useful as the pharmacologically useless "bottles" or other placebos doled out to similar patients by Scots or English general practitioners. This is not to deny that many such patients would be likely to benefit from a careful medical examination, if such were available, followed by the elimination of debilitating parasitic worm infections.

Where modern medicine is within reach, there is a danger that a preliminary trial of local remedies may in certain cases cause serious conditions to pass the point at which they are treatable before patients come to the hospital or dispensary. There are also cases where local remedies, perhaps wrongly used, cause serious harm - for instance a caustic substance used to treat conjunctivitis can cause serious inflammation of the conjunctivae, and even blindness, and a substance used to speed up labour can cause rupture of the uterus. Effective local preparations include powerful purgatives, and a corrosive application used against the patches of tuberculoid leprosy. Local treatment of neuroses and hysteria may be as effective, in many cases, as the treatments which conventional medicine can offer.

Small incisions are often made over painful sites, and a substance rubbed into them. The scars from these can often help a doctor to estimate where a patient has been feeling pain, and for how long. Charms and amulets are widely used, often in conjunction with modern medicine if that is available. Illness



and death may be attributed to witchcraft, and the function of a witchdoctor, as opposed to that of a herbalist (though one man may combine both functions), is to discover witches and render their witchcraft harmless, or turn it against the witch.

Any European who is surprised at apparently illogical or superstitious beliefs and practices should consider how many Europeans wear charms, avoid walking under ladders, throw spilt salt over their shoulders. The history of witchcraft and herbalism in Europe is surprisingly similar to that in Africa.

Dietary taboos, and conservatism over dietary matters, may contribute to the prevalence of malnutrition, but these are changing with time and education. An aversion to eating eggs, for instance, perhaps from a fear of some effect on fertility, seems to be getting less. The Moslems, a substantial proportion of the population, will not eat the flesh of the wild pig, warthog, hippopotamus or elephant. This must be accepted, but the meat of these animals, especially of the wild pigs - which raid the villagers crops, can still be a valuable source of protein food, on occasion, for the Christians and for the followers of African traditional religion.

A menstruating woman is not permitted to put salt into food. If she does, it is feared, those who eat it may develop tuberculosis. A man is believed to contract venereal disease by mating with a menstruating woman. Where such beliefs prevail over medical facts, they may lead to the wrong precautions being taken to prevent disease. A treatment for fever in an infant is, sometimes, the making of an incision inside the vagina of the infant's mother. This can lead to admission of the mother to hospital for treatment for blood loss. The infant probably in fact needs an antimalarial.

Traditional midwives used, in some cases, to urge women in labour to retain their faeces and urine until the baby was born. The resulting loaded rectum and full bladder caused delay and difficulty in labour. However, modern midwifery, when available, seems to be readily acceptable, with the exception that some



women will not willingly be attended in labour by a girl who has not herself had a baby, whatever her qualifications as a midwife.

Virtually all African infants are breast fed, and are carried about on the back of their mother, or another female relative, until the time of weaning. This is probably far better for emotional development than the Western bottle and pram, and under African conditions breast milk is much safer (and cheaper) than artificial feeding. Some weaning methods may contribute to malnutrition and gastro-enteritis.

It is customary that a woman's husband should not make her pregnant again until a surviving previous child can walk. This is valuable in preventing the strain of too frequent pregnancies on the mother but, with the increasing practice of monogamy, leads to husbands seeking sexual relief outside marriage and fathering illegitimate children. Unmarried motherhood, and illegitimacy, though not such a stigma as in many European communities, are still socially undesirable. The making available of modern contraceptive appliances and methods, with education in their use, might enable men to comply with custom while maintaining a stable monogamous marriage.

Many traditional practices are beneficial or harmless. Where they are harmful they can be corrected by education. It is vital that the educator, whether of local or foreign origin, avoid arrogance and take a genuine interest in the ideas of those with whom he is to work. A dogmatic assertion that micro-organisms in contaminated drinking water cause gastro-enteritis may seem as unreasonable to a villager as the villager's theory on the causation of tuberculosis seems to a doctor. If the villager is shown, through a microscope, (or in a film), protozoa and rotifers swimming about in a drop of drinking water, the doctor's theory will seem more probable. The doctor will be able to present his case better if he takes the trouble to learn and understand the basis of local beliefs - to learn as well as to instruct.



## THE DEVELOPMENT OF MODERN MEDICINE IN MALAWI IN THE PAST 100 YEARS.

Appeals by David Livingstone led to Christian missions from Scotland and England, including doctors, being sent to Nyasaland. Dr Robert Laws, of the Free Church of Scotland, arrived in 1875 and, after some years at other sites, set up a hospital at Livingstonia. Dr Macklin headed the Church of Scotland Blantyre Mission in 1876 (Gelfand, 1960). From England Dr Dickinson of the Universities Mission to Central Africa came out, and died, in 1861, but was followed in 1899 by Dr Robert Howard - who started hospitals and dispensaries for African patients and greatly reduced, by sensible preventive measures, the appallingly high death rate among the early missionaries (U.M.C.A., 1955).

Mission medical services were primarily for the African population, and they pioneered the training of local Medical Aides and Medical Assistants, maternity and child welfare work, and leprosy work. In the early years of British rule the government medical services were almost entirely designed to serve government personnel. African staff trained by the missions were recruited by government services in Nyasaland and other countries.

The Colonial Report for 1904-5 mentions that missions maintained 13 "native hospitals" and 16 dispensaries, and treated a total of 83,043 patients. The government's Principal Medical Officer referred to malaria, especially among children up to five years of age, and to smallpox, as the main causes of mortality among Africans. He gave few details of the government medical service, apart from mentioning the performance of 3588 vaccinations during the year, but quoted extensively from the report of Dr Laws at Livingstonia, where 13,700 cases attended as out-patients and 147 as in-patients. Dr Laws reported "Our new water supply has resulted in a decrease in the number of bowel complaints" and "Infant mortality is painfully high", both remarks which could easily have come from a mission doctor's report in 1964.

In 1904-5 the total revenue of the Protectorate Government



was £67,537 and its total expenditure £123,000 - of which £49,790 was military and £73,210 civil. No figures are given for medical expenditure for that year, but the Colonial Report for 1906-7 shows an expenditure by the government Medical Department during the year of £6,253.0.4d, including:

European staff emoluments	£4,464.18.3d
Grant to Mission	£70
Upkeep of hospitals and dispensaries:	
Blantyre	£34. 3. 5d
Karonga	3. 3. 0d
Chiromo	5. 9. 7d
Fort Johnston	13. 6. 11d
Lilongwe	5.2. 0d
Zomba	16.13. 7d

The Colonial Report for 1930 refers to 13 government hospitals with a total of about 170 beds, and 88 rural dispensaries. It mentions "very popular" attempts at mass treatment of the "almost universal" hookworm, in the Mlanje, Port Herald and Karonga districts.

In 1930 there were 618 leprosy patients maintained at mission stations in Nyasaland (Gelfand, 1960), and in 1933 the government distributed £1000 in grants between 12 mission centres treating such patients. In Blantyre the government had no African hospital of its own, and paid the Church of Scotland Mission £330 per year for performing certain medical work. The hospital at Livingstonia also received a grant. In June 1944 the government took over responsibility for male African patients at Blantyre African Hospital.

In 1911 the government had three African hospitals and two dispensaries. By 1922 it had 44 dispensaries, mostly built of wattle and daub (sticks and mud for the walls and a grass thatch roof). By 1934, with money from the Colonial Development Fund, 36 out of 92 dispensaries were erected of more permanent materials. In 1935 Dr A.D.J. Bedward Williams, the Director of Medical Services,



recommended that dispensaries should be extended into Rural Health Units, each with a well trained Dispenser, a Midwife and a Sanitary Inspector. Little was done, for lack of funds. Dr MacKenzie, a later D.M.S., began erecting four Health Units in 1948, and they were in operation in 1952. They were staffed by:

A Hospital Assistant,  
A Medical Aide,  
A Midwife, and  
A Sanitary Assistant, and they comprised:

A dispensary,  
A four bed maternity ward,  
A labour ward, and  
A rest house for patients from a distance.

Treatment was free, but patients brought their own food.

Early training of Medical Aides, and of Hospital Assistants - who were more highly trained and competent, was entirely by the missions, but the government started training dressers at Zomba in 1930. In 1935 the new Zomba Hospital had classes for dispensary dressers, Medical Aides (two year training), laboratory assistants, and rural sanitary inspectors. When Blantyre Mission ceased to train Hospital Assistants (a four year training to a high standard), the trainees were transferred in 1943 to Zomba and completed their training with the government. Thereafter the best Medical Aide students at Zomba were selected for an extra year of intensive training to become Medical Assistants. Training was also done at Livingstonia, and by the U.M.C.A. at Likoma Island and elsewhere. A new training school for Medical Aides was started by the Federal Government at Lilongwe in 1957.

Under Miss Woodley, the U.M.C.A. started a midwives training school at Kota Kota in 1941 (U.M.C.A., 1955). The training of older women who had had little or no schooling (through lack of opportunity) was found to provide valuable and acceptable midwives. Midwifery training was also carried on by the Scots, and Dutch Reformed Church, missions. In 1951 government training of midwives started at Zomba (Gelfand, 1960).



In 1930 one European Sanitary Superintendent was employed at Zomba, and there were an African Senior Sanitary Inspector, six ordinary Sanitary Inspectors, and 43 vaccinators. In that year Dr Shircore (Shircore, 1930) recommended that four new Sanitary Superintendents and five Health Visitors should be appointed. In fact over the next five years the staff was increased to one Senior Health Officer (a doctor), two European Sanitary Superintendents, 18 African Sanitary Inspectors and 44 vaccinators. Under the Sanitary Board Ordinance, 1929, sanitary boards were appointed for Chiromo, Fort Manning, Lilongwe, Karonga and Dedza. The District Commissioner was Chairman, the local Medical Officer a member. These were supposed to arrange sanitary measures locally, the cost being met from a local rate. In 1935 the Sanitary Section was merged with the Health Department.

In 1946 the registration of African Hospital Assistants in a medical Sub Register was abolished (Nyasaland Protectorate, Report of the Medical Department for the year 1946). A Midwives Board was established. Total expenditure by the Medical Department, apart from that chargeable to the Colonial Development and Welfare vote, was £84,842.16.11d, or 6.6% of the total revenue and 7.5% of the total expenditure of the Protectorate for the year.

In 1945 smallpox was recorded as producing 202 cases with two deaths, in 1946 968 cases with 36 deaths. 402,650 persons were vaccinated in 1946, but despite this the incidence of the disease was reported to be rising again in 1947.

In 1946 there were 852 cases of measles reported, with 21 deaths. Malaria showed 16,928 cases among Non-Europeans, with 48 deaths (cases known to the authorities must have been a minority of actual cases in the country as a whole) and 471 cases among Europeans with three deaths. There were 9 cases of trypanosomiasis, 7 from Kota Kota. Relapsing fever was reported to be common throughout the country: of 323 cases 218 were admitted to hospital and three died. 330 cases of tuberculosis were recorded, five in Europeans. Seven Mission leprosy



settlements were reported to have 814 in-patients and 249 out-patients. There were two "European" and 19 "African" hospitals in the country. Seven of the latter were under a Medical Officer, five under and Indian Sub Assistant Surgeon, and seven under Hospital Assistants. 96 rural dispensaries treated 531,636 cases, and the hospitals treated 232,582 cases, 24,220 being in-patients. A total of 764,218 African patients were treated at government hospitals or dispensaries during the year. (Nyasaland,1947).

In 1953 government medical expenditure was 7.31% of the estimated total ordinary expenditure of the Protectorate for the year, and 6.06% of the estimated total expenditure. Assistance from the Colonial Development and Welfare Fund was £32,550. Government medical services treated 1,208,971 out-patients and 35,919 in-patients. (Nyasaland,1954). (Considering the scanty nature of the medical services, these figures suggest that a surprisingly high proportion of the population received treatment. It seems probable, however, that many individuals will have been counted more than once in the totals).

Two interesting surveys were done in 1953 of stool, urine and blood specimens from 762 individuals in the area of the Domasi Community Development Scheme, and from 1559 male prisoners at Zomba Prison. (Nyasaland 1954). Results were (per centage of specimens with positive findings) :

	Prisoners	Domasi
Stool: Hookworm ova	16.9%	7.6%
Ascaris ova (roundworm)	2.3	2.1
Schistosoma mansoni ova	1.0	0.52
Tapeworm	0.1	0.13
Urine: Schistosoma haematobium ova	21.8	24.9
Blood: Kahn H or HH	3.9	12.81
Malaria parasites present	3.6	11.0
Microfilariae present	0.1	nil



In 1953 the Federation of Rhodesia and Nyasaland came into being, and health services came under the control of the Federal Government. Of the European staff in the Nyasaland Medical Department, some transferred to the new Federal service, others - including Dr W. Petrie, who had played an important part in training African staff, left the country. African staff were seconded to the Federal service until 1959, when they had either to take abolition of office or transfer to the Federal Government service. Due to the unpopularity of the Federal Government (plus attractive compensation payments) many took abolition of office.

Under the Federal Government, expenditure on medical services continued to rise, though not as fast as would have been expected had the three territories genuinely been treated on an equal basis. The unpopularity of the government, and its remote direction from Salisbury, reduced the effectiveness of the service provided. The following figures, giving government expenditure on medical services in the three territories, were extracted from the Morton Commission Report in 1960 (Stevenson, 1960):

	Southern Rhodesia 1958/9	Northern Rhodesia 1958/9	Nyasaland 1958/9	Nyasaland 1953
Total population	2,903,800	2,394,900	2,801,400	
Europeans	218,000	75,000	9,000	
Recurrent expenditure	£3,655,031	£2,170,266	£775,219	£273,172
Capital exp.	£272,655	£399,107	£85,373	£26,082
Grants to Missions	£122,867	£117,122	£56,282	£10,330
Approved establishment of Medical Officers, including clinical specialists:	138	82	47	27
Approved establishment of trained nurses:	718	303	57	34

The "establishment" figure of Medical Officers for Nyasaland was not reached. In addition to the government's doctors there were, in 1958, 10 mission doctors, and a very few in private practice.



The article (Stevenson, 1960) giving these figures noted that only three Nyasaland African and one Afro-Indian had qualified as doctors, and the urgent necessity to send young men and women to other countries for medical and nursing training, though "Malawi will aim, one day, to have its own University, with a Medical School, and its own training schools for fully qualified nurses,..." The study of how Ghana and Nigeria were coping with medical problems was recommended. The article drew a pained letter from the Federal High Commissioner in London, who expressed particular distress at the writer's assumption that Nyasaland would not much longer be in the Federation.



## HEALTH SERVICES IN RECENT YEARS

From 1960 to 1963 total annual government expenditure in Nyasaland (Federal and Territorial) was in the region of £15 million, of which rather under £1 million was on health services. The following figures are extracted or calculated from the 1961 report of the Federal Secretary for Health (Rhodesia and Nyasaland, 1962), and from a letter from him.

Government expenditure on health services, 1960/1	£892,000
Total estimated population of Nyasaland	2,890,000
Government expenditure on health per person per year	6/2d
For comparison, the figure for Southern Rhodesia was	27/1d
and for Northern Rhodesia	20/-
Total number of doctors in Nyasaland	73
(Including Government and Mission doctors, and private practitioners)	
Population per doctor	39,589
Grants to Missions in Financial year 1961/2	£72,477

One mission estimated that government grants covered about half its expenditure on medical work (Diocese of Nyasaland, 1963).

Mission services appear to cost very much less per bed provided and patient attended than government services, though it must be remembered that the government had most of the expensive equipment and specialist staff. In 1962 almost all of the medical missions in the three territories combined to point out to the Federal Ministry of Health that the level of grants in aid was not sufficient to enable the missions properly to continue their existing volume of work. Though grants were appreciated as making the medical work of the missions possible, the government was getting a bargain - if the missions did not do the work it would cost the government a great deal more to do it itself. The principal cause of discontent was the inability of the missions, under the grant structure, to pay African staff at the same rates as similarly qualified staff could obtain in government hospitals. (Diocese of Nyasaland, 1963).



In his annual report the Secretary for Health (Rhodesia and Nyasaland, 1963) gave the following figures for the staffing of the medical services in Nyasaland in 1962:

Government staff.	Establishment. Posts filled at 31/12/62.	
Director of Medical Services	1	1
Deputy D.M.S.	1	1
Medical Superintendents, £2958	3	3
Provincial Medical Officers	3	3
Director of Public Health Laboratory	1	1
Government Medical Officers	30	23
Resident Medical Officers	2	0
Junior Resident M.O.s	0	3
Clinical specialists, £2958 grade:		
Medicine	1	1
Ophthalmology	1	1
Radiology	1	1
Surgery	1	1
Tuberculosis	1	1
£2634 grade: Anaesthetics	1	1
(Not listed in the report, but in fact present, was a leprosy specialist at Kochira Leprosarium).		
Government Dental Surgeons	3	3
Dental Mechanics	1	1
Dental Attendants	3	2
Nursing staff, all grades (State Registered)	79	63
Ward attendants	0	4
Professional and technical staff:		
Analytical chemists	1	1
Pharmacists	8	8
Health Inspectors	5	5
Laboratory technicians	6	4
Radiographers	4	3
Physiotherapists	2	2
Field Officers (Health)	4	4



Ex	Establishment.	Posts filled at 31/12/62.
Leprosy Superintendents and Medical Inspectors	1	1
Clerical and administrative staff, Branch I	21	21
Other staff, Branch I	6	6
Branch II: Health and Medical Assistants	21	
Others	3	
Branch III: Health and Medical Assistants	502	
Others	279	
Trainees	175	
Branch IV: All categories	868	

Total: 2,041

On the Nyasaland Register there were:

109 Registered Medical Practitioners

6 Licensed Medical Practitioners exempt from registration

6 Dental Surgeons

14 Chemists and druggists

The actual figure for doctors in the country was 79.

Government hospitals in 1962 were as follows:

	Nurses	Medical Auxili- aries	Beds: European	Asian & Coloured	African
Central Hospital:					
Blantyre	36	135	36	35	397
General Hospitals:					
Lilongwe	16	112	16	11	203
Zomba	16	104	17	8	282
Thirteen District Hospitals:					
(range)	0	11 to 25	-	-	44 to 140
Totals of above:	68	562	69	54	2083
District Hospitals were at Chikwawa, Cholo, Dedza, Dowa, Fort Johnston, Karonga, Kasungu, Kota Kota, Mlanje, Mzimba, Ncheu, Nkata Bay, and Port Herald.					



Other government units were Rural Hospitals, under a Senior Medical Assistant, rather than a Medical Officer - and smaller than District Hospitals, and Rural Health Centres. Details of these are:

	19 Rural Hospitals.	94 Rural Health Centres.
Aggregate number of beds	500	94
Admissions during 1962	19,955	1,458
In-patient days (units)	187,262	6,755
Out-patient attendances	1,354,647	4,299,941
Deaths	374	3

("Out-patient attendances" is the number of treatments given, not the number of patients).

New 22 bed Rural Hospitals were completed at Fort Hill and Ngabu during 1962. The government also had a leprosarium at Kochira and a mental hospital at Zomba.

The following Christian bodies provided mission doctors in Nyasaland in 1962:

The Church of Central Africa Presbyterian (Formerly the Church of Scotland and the Dutch Reformed Church Missions).	7 doctors
The Diocese of Nyasaland (Anglican, supported by the Universities Mission to Central Africa)	2
The White Fathers (Roman Catholic)	3
The Montfort Marists (Roman Catholic)	2
The Seventh Day Adventist Mission	2
The Seventh Day Baptist Mission	1
The Church of Christ, and the South African General Mission, also had medical units, though no doctors.	

The figures for medical missions (still from the Federal Secretary for Health's Report for 1962) are incomplete, as may be some of the government figures, but by adding the two we can get approximate totals for the medical services of the country in 1962. (Apart from government and mission services there were only



a few private practitioners and railway and industrial clinics).

1962 figures.	Government.	Missions.	Total.	
Medical units	131	61	192	
Admissions		73,274		
In-patient days		631,696		
Deaths	2,094	1,614	3,708	a
Out-patient treatments	7,581,052	1,977,908	9,558,960	
Doctors (including administrators)	41	17	58	
Nurses (State Registered)	68	66	134	
Medical Auxiliaries	805	155	960	\$
Beds	2,850	1,605	4455	o

- a The figures for deaths mean little, as patients and their families frequently prefer death to occur at home - so that patients often leave hospital when death seems likely.
- \$ As the government figure for medical auxiliaries I have taken the total of Branch II and Branch III in the staff table, not including trainees. The mission figure is probably too low through only including staff in posts approved by the government for grant-in-aid purposes.
- o The mission figure for beds is too low as it includes only beds approved for grant-in-aid. Beds at Zomba Mental Hospital are not included, nor are places for leprosy patients at leprosaria.

The Public Health Laboratory performed 131,360 examinations in 1962, as follows:

Parasitology	53,289
Bacteriology	8,110
Serology	12,619
Haematology	18,155
Biochemistry	36,408
Pregnancy tests	63
Histology	1,991
Medico-legal	628
Clinical autopsies	97



In 1962 the Public Analyst at Blantyre did 1675 investigations on 765 samples.

Though there were facilities for radiology in the country, patients requiring radiotherapy had to go to Salisbury in Southern Rhodesia. For certain treatments such as heart surgery, and the fitting of articulated artificial limbs, patients also had to go to Salisbury.

Under the Federal Government general medical treatment for African patients was free, except that women had to pay a charge for delivery in some of the larger hospitals. Some appliances (such as artificial limbs) were charged for. Non African patients had to pay fees for treatment. Mission hospitals generally charged small fees to all patients.

From July 1963 the Federal Government ceased to finance medical services in Nyasaland, but continued to run them on a temporary basis, the cost being met by the Nyasaland Government from a grant from Britain.

On 1st November 1963 the Nyasaland Government once again took over responsibility for Nyasaland Medical Services, with Dr Park, a former Deputy Director of Medical Services, as Secretary for Health, assisted by Dr Bwanausi, with Dr Banda, the Prime Minister, as Minister of Health.

Having lost staff who did not fancy the Federal service, in 1953\* and after, the medical service now lost some of the Federal staff. However, before the return to Nyasaland control, a group of eight Israeli doctors, seconded by the State of Israel, arrived to help the Nyasaland service, ensuring that it was not left without doctors.

The Federation itself formally came to an end on 31st December 1963. Nyasaland remained a British Protectorate, with full internal self-government, until she became the independent State of Malawi on 6th July 1964, the anniversary of the return of Dr Banda to the country in 1958.





A triumphal procession. 27th September 1960.

The picture shows Dr H.Kamuzu Banda, sitting on the front of the Land Rover, driving through cheering crowds, on the road from Dedza to Lilongwe, on his way North to the first big rally of the Malawi Congress Party - held at Nkhota-kota. The men in masks and head-dresses are traditional dancers.

(I was travelling in the same direction, had got behind the procession, and stood on the roof of my car to take this picture).



## THE POSITION IN 1964

### The National Situation.

The Nyasaland Minister of Finance, in his first budget after the end of Federation, was reported on 10th January 1964 ("Malawi News") as estimating total expenditure for Nyasaland as £15.6 million and total income as £ 9.1 million, the deficit to be made up by grants and loans from Britain. Some money will also be raised and spent locally by local authorities.

Aid from overseas includes the provision of large numbers of teachers, and other workers, by the United States of America Peace Corps, and the secondment of doctors from Israel. "Malawi News" for October 2nd, 1964, reports agreement on a £900,000 loan to Malawi from West Germany "for development of the Malawi tobacco industry and canalisation project in Blantyre-Limbe". Voluntary agencies (Christian missions) bring worthwhile sums of money into the country, together with educational and medical staff who, though given grants in aid, cost the government very much less than it would do to find the staff itself. Smaller aid projects sponsored by other countries have included a Fishery Research Institute at the Southern end of Lake Nyasa, for which the capital was collected by voluntary subscription in North-East Scotland.

Any measure which improves the level of education and standard of living of the people can be expected to lead to an improvement in their health. Education has had the highest priority since Independence, and a tremendous expansion has taken place in the numbers of secondary school places and of people sent abroad for higher education. There are plans for a University of Malawi.

In approximate figures, one may compare the budget of £15.6 million for 3.5 million people with government expenditure in Ghana (1961-2) of £128 million for 7 million people, and in Norway (1963) of £690 million for 3.6 million people. But in Ghana, then the Gold Coast, in 1950, the total annually recurrent expenditure of the government was £14,012,605 of which 6.9%, or £965,020 was spent by the Ministry of Health (Ghana, 1955).



That is not too dissimilar to the recent situation in Malawi. By 1954 Ghana's expenditure had risen to £77,378,833 of which 2.7%, or £1,913,098, was by the Ministry of Health. In 1961-2 the Ministry of Health annual recurrent expenditure in Ghana was in the region of £8 million, and in 1963-4 the Ghana government allocated £31 million to be spent on the extension of medical services in a seven year plan. (Ghana 1964).

Malawi exports include tea, tobacco, tung oil, some agricultural products, and dried fish. These do not bring a big income, but one great economic advantage which she has over the financially richer countries of the World is that the bulk of her population can be self-supporting in the essentials of life - food and shelter.

National income may be increased by increased exports, but a richer field is likely to be the development of local production of foods and goods which at present are imported. Much is being done on these lines. For instance sugar cane grows well in Malawi, and she should be able to manufacture her own sugar.

Among the resources for tackling the national problems may be listed national unity, and harmony between people of differing racial origins, and the idealism of a newly independent nation determined to make good use of its freedom. In September 1964 this harmony suffered a set-back in the clash between Dr Banda, the Prime Minister, and a group of younger Ministers, formerly Dr Banda's chief lieutenants, who resigned or were dismissed. Despite this clash there is still (2nd November 1964) an encouraging degree of stability in the country.

That Malawi can produce able and intelligent people has been amply proved by the numbers of Malawis to be found in good jobs in other African countries (which is among the justifications for the description of them as "The Scots of Africa"). Beautiful and varied scenery, friendly people, and the chance to do jobs which really need doing, may encourage necessary foreign experts, such as doctors and agriculturalists, to work in the country, and the political stability has encouraged foreign investment. The range of climate and abundance of water make possible almost unlimited



developments in the fields of agriculture and horticulture, forestry, and fishery and fish farming. The need to wipe out malnutrition and to provide for an increasing population make such developments imperative.

### The Health Situation.

I have summarised the state of health services up to 1963 on pages 20 to 25. Medical services have been maintained, but remain thin on the ground. I quote from a letter from the Ministry of Health, (Ref. 6371/68, of 19th September 1964):

"I enclose for your information part of an Establishments List prepared for our own purposes which will give you an idea of the situation. During October, there are expected to arrive a Matron, seven staff nurses and two V.S.O.s.

The following are being trained abroad :-

- 18 Doctors,
- 48 Nurses,
- 2 Pharmacists,
- 1 Physiotherapist.

The estimated expenditure for 1964 was £987,292, but it is at present expected to amount to some £900,000 in fact. The estimated revenue for this year is £44,215, but it is expected to amount to £ 40,000.

On 6th July a 3d. charge for African outpatients or for outpatients at Grade III O.P.D.s was introduced, but as it is paid for by postage stamp and the revenue from it is accruing to the Post Office at present, it is not represented in the revenue figures given above. Other charges are at present much as they were at the Federal Ministry of Health whose scales have been retained. A Health Revenue Committee was appointed in June of this year to determine what scales of charges should be raised, but it is not known when this Committee will report.

There have been no other innovations since Independence."

(V.S.O.s are British "Voluntary Service Overseas" volunteers, who normally serve for one year after leaving school and before going on to University. They have (usually) no formal qualifications).



From the Establishments List, as at 1st August 1964, I have extracted the following figures:

	Posts filled.	Posts vacant.	Posts in abeyance.
Doctors, clinical and administrative.	25	13	5
Principal Medical Assistants	13	4	-
Dentists	3	1	-
Dental Mechanics	1	-	-
Health Inspectors	4	1	-
Regional Health Assistants	3	1	-
Pharmacists	4	3	-
Nurses	49	13	-
Radiographers	2	-	-
Physiotherapists	1	-	-
Laboratory Technicians	2	-	-
Public Health Laboratory Director	-	1	-
Public Analyst	-	1	-

Government doctors were stationed only at the following centres: Blantyre, Kochira leprosarium, Lilongwe, Mlanje, Mzimba, Port Herald and Zomba. At Cholo and at Fort Johnston mission doctors were covering vacant Government M.O. posts.

It will be some time before those being sent overseas for training can qualify and return - to improve the staffing situation. According to information from the Ministry of Education (with letter SC.2/471/35 of 28th October 1963) the following students overseas are expected to complete their training in the years shown.

	1964	1965	1966	1967	1968	
Medicine	1	-	9	5	3	(17 men and one woman).
Pharmacy, degree level	-	-	1	-	-	
Nursing, (women)	2	2	16	14		
Male Nurses	1	3	3			

These figures may not include some of those who have gone abroad for training on their own initiative, or under private



sponsorship. A letter from the Malawi High Commission (CMG/J/5/83 of 25th September 1964) gave numbers of students studying for medical and allied qualifications in Britain as:

Medical Students	10
Nursing Students	44
Veterinary Surgeons	1

Of these, there are eleven Student Nurses at Bridge of Earn Hospital, Perthshire - many being men who were formerly Medical Assistants. "The Times" (Blantyre) has mentioned the departure of 14 Girls to Israel, and 12 to Vienna, for nursing training.

In August 1964 about one third of the doctors in the government service were Israelis on secondment, and about two thirds of the nurses employed were married women. (A substantial proportion of European wives in Malawi are nurses).

Numbers of health staff in the country were increased in October by the arrival of a team of 41 U.S. Peace Corps Volunteers to take part in a campaign to eliminate tuberculosis from selected parts of the country ("The Times", of Blantyre, 2nd October 1964). These were headed by an American tuberculosis specialist and included six nurses, X-ray technicians, and "college graduates". These are equipped, and receive £40 per month subsistence allowance from the U.S. government. The Malawi government provides the necessary drugs, and furnishes houses and transport in Malawi. Peace Corps Volunteers serve for approximately two years. The U.S.A. also gave Malawi an Independence gift of a £12,000 mobile T.B. X-ray unit. ("The Times", 8 Sept. 1964).

A £100,000 leprosy control project for Malawi was recently announced ("The Times" 25 Sept. 1964). This is sponsored by LEPRO (The British Leprosy Relief Association), and approved by the World Health Organisation. £70,000 will come from the (local)

Brown Memorial Trust, and £25,000 from LEPRO. The Secretary for Health estimated annually recurrent costs at about £50,000, most of which would be raised outside Malawi. The Scheme is expected to last seven to ten years.





Leprosy outpatient clinic. August 1960.

The picture is of patients and others congregated at one of the subsidiary clinics of Likwenu Leprosarium for the weekly visit of the Superintendent - a leprosy worker provided by the British Leprosy Relief Association. Between these visits a locally recruited Orderly looks after the clinic building and gives some simple treatments. Dapsone is given out at the weekly visit.



Children on Malindi Mission Station. (About 1962).



Mission medical services remain important. A Mission M.O. reported shortly before Independence "We cannot say with any assurance what government health policy will be after Independence on July 6th" (Diocese of Malawi, 1964). He remarked that the cessation of government grants (if it occurred) would result in a reduction of £8,600 in the income of his organisation, which he expects to spend £16,707 on medical work in the year 1964/65. It would be difficult for the supporting Church to make up this sum. However, assuming government grants continue, he recommended ".... that all available resources be committed to needed capital expenditure in our medical units. By expanding our work, and improving our facilities where possible, I believe we can perform a valuable service for the people of this country and provide a practical demonstration of our faith in the future." As an example of an area where medical work should be expanded he quotes Liwaladzi: "This is thirty miles North of Nkhota Kota on the lake and isolated a good part of the year because of poor roads. Fr. Bai, the priest in charge, is a medical assistant, and keeps a small supply of medicine to dispense. He originally started this work because one of the people in the area was drowned fording a stream on the way to hospital at Nkhota Kota. No statistics are kept but at last report Fr. Bai was seeing 40-50 patients a day. There are no other medical facilities within a thirty mile radius of Liwaladzi and the work of Fr. Bai has demonstrated the acute need in this region. It would be an ideal region to expand our medical work." (Diocese of Malawi, 1964).

The report then estimates the expense of opening up medical work at Liwaladzi as:

- |   |        |
|---|--------|
| 1. Construction of dispensary with examination room, small laboratory, delivery room for midwifery and three bed ward for seriously ill patients... | £1,500 |
| 2. Cost of equipping above...&...   | £400   |
| 3. House for medical assistant..  | £500   |
| 4. Recurrent expenditure : wages and maintenance  | £500   |



Those planning the development of national medical services for the immediate future are probably limited to a budget of around £1 million per year, though it is to be hoped that this will increase with time. It can be made to go further by self-help schemes within the country, and by aid from other countries, international organisations, and voluntary agencies.

Sanitation in most of the country consists of pit latrines outside the houses, and often faeces and urine are deposited in the bush, in fields, or on the lake and river edge, leading to widespread transmission of hookworm and bilharzia infection. Drinking water is usually drawn from lake, river or waterhole, in a can or pot, and is frequently unsatisfactory, though some places have piped water from safe supplies. Mosquitoes breed profusely in and near many villages. Refuse disposal is often unsatisfactory, increasing the fly nuisance.

Malaria is holoendemic in much of the country. Along with worm infestations and subnutrition it contributes to the moderate and severe anaemia which is widespread - and which must seriously impair the ability of the people to work and to enjoy life.

Smallpox is endemic, sometimes locally epidemic. Tuberculosis is more widespread than figures for cases treated suggest. A few years ago a World Health Organisation team came to make a tuberculosis survey, but it was unable to complete its work because of political conditions at that time. It did not publish its report, but unofficially it was said to have obtained findings suggesting that 1% of the population was suffering from active tuberculosis. Could the presumed 35,000 cases of tuberculosis in the country be found, the present health services would be quite inadequate to treat them.

Almost any disease may be met with, but to give an idea of prevalence here are (page 33) figures for 1962 for patients seen at a group of eleven mission medical units which were under my supervision. They treated 37,462 out-patients and 3,281 in-patients during the year (Diocese of Nyasaland, 1963).



On 1961 figures this group of units were giving rather under 12% of the out-patient treatments in the territory, and providing rather under 3.4% of the hospital beds. Taking the average of these as 7½% it might be fair to suggest that the units served a population of about 250,000 people. A great many sick people never seek treatment. The figures for numbers of patients treated were:

Malaria	5,668 patients
Tropical Ulcers	4,386
Conjunctivitis	3,786
Hookworm	3,748
Dysentery & severe diarrhoea	1,812
Whooping cough	1,655
Bilharzia	1,476
Leprosy	1,277
Scabies	1,012
Measles	720
Severe malnutrition	635
Syphilis	490
Pneumonia	443
Gonorrhoea	385
Chickenpox	198
Tuberculosis	108
Dog bites	59
Fractured bones	58
Malignant growths	40
Abortions	29
Snake bites	26
Deliveries: Live infants	1,558
Stillbirths	70
Women at ante-natal clinics	2,247
Infants at baby clinics	1,958
Teeth extracted	346
Operations: General anaesthetic	51
Local anaesthetic	317



Cases of smallpox, neonatal tetanus, poliomyelitis, typhoid, relapsing fever and injury by crocodiles were also recorded. Anæmia, though common, was not separately recorded.

It will be seen that the vast majority of conditions listed should be preventable by education and by public health measures. Emphasis in medical services in the past has been on curative rather than preventive measures.



## THE PROBLEMS

Those who plan for the future health of the Nation are faced with the following problems:

1. How to raise the general level of education in the country.
2. How to raise the standard of living, including improvement of agriculture and fisheries, of housing, and of roads and communications.
3. How to obtain useful information about the population and its health, in particular, reliable figures for the total population, and its distribution, and birth, infant mortality, maternal mortality and death rates, to assist in assessing medical and other needs and to enable comparisons to be made with other countries, and progress to be measured.
4. How best to provide public health and preventive medical services, including the provision of public health education.
5. How to provide the most appropriate curative medical service within the finance and resources available.

The first and second problems will not be further referred to in this thesis, except where they impinge directly on medical matters. The health authorities should keep in touch with what is happening in all fields in the country, and be ready to give advice to, and co-operate with, other departments, and be quick to point out any public health implications of the plans of other departments (such as irrigation schemes affecting mosquito breeding, or the probable transmission of bilharzia).

The other problems will be considered together in the next two sections. Appendix I contains an account of how some other African states have met, or propose to meet, similar problems.





Small boy with fish. Malindi. May 1960.

A group of children saw a shoal of small fish (*Engraulicypris sardella*) at the edge of the lake. With a sheet from their mother's dress, they went into the lake and trapped some of the fish - in the basin at the boy's feet. The fish will be greatly enjoyed as a relish with the evening meal. This species, locally known as "usipa", is like whitebait and is popular as food. Notice the reeds in the background. This bit of beach is used as a latrine, and the children may be exposed to bilharzia infection in the water and to hookworm infection when walking on the wet sand at the edge.



## SECTION TWO

### COMMENTS ON SOME SPECIFIC PROBLEMS



## SECTION TWO : COMMENTS ON SOME SPECIFIC PROBLEMS.

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## REGISTRATION AND STATISTICAL INFORMATION

In the past, registration of births, deaths and marriages, in the manner to which we are used in Western Europe, has only been required for the "non-African" section of the population - less than 0.6% of the people. Some marriages are registered, and among Christians baptismal certificates are sometimes used as proof of parentage and date of birth but, in general, no official notice has been taken of the birth or death of an ordinary villager. Village headmen, or other officials, may be required to make returns of numbers of births and deaths, and of numbers of people living in a village.

I have heard a Blantyre accountant state that the method of estimating the total population, in 1962, was to take the number of taxpayers, (supposedly all adult men, apart from those granted specific exemption for medical or other reasons), multiply by two to allow for those who avoided paying tax, and multiply again by five to allow for dependents. The accountant believed that the proportion successfully avoiding paying tax had been underestimated, supporting his view by pointing out that new methods of tax collection being introduced by the government (in 1963) were revealing unexpectedly large numbers of taxable men. (Employers were made responsible for deducting tax from the wages of employed adult men, in monthly instalments, and sticking tax stamps on a card for each such employee. Previously each adult African man was himself responsible for paying his tax of 30/- once a year).

Reasonably accurate censuses, with registration of births, stillbirths, deaths and marriages, are regarded as essential in the materially prosperous and highly organised states of the World, and must ultimately be obtained in Malawi.

To provide an initial count of the population it would probably be possible, without prohibitive expense, for the Malawi Government to arrange for a census to be held throughout the country through the organisation of the Malawi Congress Party,



together with its Women's League, Youth League and Young Pioneers. Organised voluntary workers could record the number and distribution of houses, marking and numbering them on district maps, with the number of persons in each house - and the sex and approximate age of each person. It might not be practicable to have one "Census Day" for the whole country, but provided it was done over a fairly short period travellers would be unlikely to introduce a significant error. Possibly reference numbers or letters might be used for approximate age groups - for instance:

- A aged under one year
- B over one but under five years
- C over five but under 10 years
- D over 10 but under 20 years
- E 20 to 39 years
- F 40 to 59 years
- G 60 years and over

Alternatively, the school starting, and usual primary school leaving and secondary school leaving ages might be used as steps. If this were too complex, initially a count only of houses, and the number of persons in each, would be of value, perhaps with a sample survey of small areas throughout the country to suggest age and sex distribution.

Such a census every five years would usefully show population growth, and alterations in age and geographical distribution. As the size and distribution of the population appears to be already changing rapidly, the sooner a "base-line" census can be carried out the better.

With the years, censuses will no doubt grow in complexity. As and when possible it would be valuable to add information as to the size of each house, whether it is of temporary or permanent construction, whether or not it complies with standards to be laid down regarding overcrowding and mode of construction, and the nature of its water supply and sanitation (if any).



If an aerial photography survey of the country could be done, it would enable an accurate map to be drawn and the number of houses, and their distribution, returned by census takers, to be checked against the photographs.

Ghana (Gold Coast, 1954) started its system of registration of births and deaths by defining "Registration Areas" in which all births and deaths must be registered, and periodically defining new such areas - with the ultimate object of covering the whole country. A detailed study of how this has worked in Ghana might be of use to Malawi.

A start might be made in Malawi by defining the principal townships as Registration Areas and insisting on registration of births, stillbirths and deaths occurring within their boundaries. Certain forms of marriage are already registered, and the extension of marriage registration will probably be contemplated - though that will involve social and legal problems.

Registration areas could be extended as appears practicable and desirable. It might be desirable to arrange for some (such as all pre-school children), or ultimately all, of the population of Registration areas, born before the start of Registration, to register their names and approximate years of birth, and to receive registration certificates which would have similar validity to birth certificates for legal purposes. This might be of particular value to young people likely to go abroad for further education - who are sometimes seriously embarrassed by their lack of birth certificates in countries where everybody is expected to have one. Due to the African practice of having several names, care might have to be taken that individuals are registered under the name by which they will in future be known, and that any change of name after registration should be registered - and entered on the birth or registration certificate.

At registration of deaths, the cause of death should - as nearly as possible - be recorded. In some areas it should be possible to require that a death certificate, giving the cause of death as nearly as he or she can estimate, be signed by a doctor,



nurse, medical assistant, health assistant or midwife, but in many areas, perhaps initially in all, approximate cause of death will have in many cases to be given by a responsible relative or neighbour. The ultimate recording of causes of death according to recommended international classification will be a long term aim.

An attempt should be made to have stillbirths registered, but complete figures, and accuracy in distinguishing stillbirth from abortion, are unlikely to be obtained until it becomes routine for women in labour to be attended by a qualified midwife or other medical attendant.

#### Records and notifications from medical units and practitioners.

All medical units should be required to keep records of numbers of patients seen and treated, of numbers suffering from each disease, and of other work done. The Ministry of Health should include in its reports work done by mission, local authority and industrial units, and possibly also by private practitioners (including midwives in private practice). To facilitate this the Ministry should distribute to all units and practitioners forms listing the main diseases, with spaces for unusual ones to be added. A monthly return on this standard form could be required, a duplicate being kept by the unit. It is essential that returns be kept as simple as is consistent with getting useful information.

These returns could include notifications of infectious diseases, so that trends in these can be estimated. Such notifications have in the past been most incomplete. Units would of course notify the Ministry immediately, by the quickest route, on the appearance of a case of smallpox - or of any other disease thought to be sufficiently dangerous and infectious - in any area where there are not known to be cases already. Notification procedures which are too elaborate will be ineffective.



### Industrial accidents.

Notification of accidents in factories and workshops has been carried out, in theory, for some time. Copies of returns of these should go to the Ministry of Health, and arrangements for the collection of information on industrial and occupational diseases, and industrial accidents, will have to be improved. It should be made clear to employers that the collection of such information is not intended to show how careless they are, but to help in safeguarding the health and working capacity of the nation. Publication of figures in Ministry reports may warn of any undue prevalence of such incidence - and lead to the taking of precautions and suggestion of remedies.

Parasitic diseases might be regarded as occupational diseases of farmers and fishermen - whose work increases their exposure to hookworm, bilharzia and malaria infections. Apart from this, such self employed persons suffer an unknown number of, sometimes serious, industrial accidents. Hands or feet may become septic after injury by thorns or fish-spines. Fishermen may be injured by crocodiles, or hippopotami. Carelessly handled petrol for boat or tractor engines can lead to burning accidents. If medical units were required to mention such incidents separately in their monthly returns, when they treat such cases, it might be possible to define the extent of the problem and see which such accidents are most frequent - but the need for this must be balanced against the undesirability of increasing the complexity of monthly returns required from units.

### Surveys.

Teams surveying sections of the population might obtain useful information on the extent of medical problems, such as the incidence and morbidity and mortality from hookworm infection, bilharzia, malaria, anaemia and malnutrition. Tuberculosis and leprosy might particularly lend themselves to such surveys. This might be combined with treatment, as is done by Medical Field Units in Ghana, and is a field in which international bodies,



or teams from foreign universities, for instance, might be willing to help. This will be further discussed in the following pages.



## HEALTH EDUCATION

Hookworm infection, one of the major causes of morbidity in the country, as well as bilharziasis, could be eliminated if everybody had and used adequate latrines. In the long run, public health education to persuade people that this is both possible and desirable is the only real answer to these conditions.

Health is not a matter only for medical personnel. For a long time "Hygiene" has been a subject in schools, but it is often taught by inadequately trained teachers with insufficient teaching aids. Teachers Training Colleges must give teachers a good basic understanding of hygiene, relevant to conditions in Malawi, so that they can pass on that understanding to the children in the schools. They must be made to feel that Health is as important a subject as Arithmetic or English - more so, in that it should pervade the whole of one's life. Teachers could be greatly helped by clear booklets and posters produced in and for Malawi.

The staff of all medical units should be encouraged to carry out health propaganda. Simple posters on, for instance, how to avoid hookworm infection, should be on display at all units.

It has long been the practice at some mission hospitals to hold prayers for patients and staff at the opening of the outpatient clinic in the morning and afternoon. On these occasions a member of the staff gives a brief talk about some health problem, relating it if possible to some event which the people present know about. For instance if an infant has died of neonatal tetanus the Medical Assistant tells the assembled outpatients and others why the baby died and how the death could have been prevented, and urges them to ensure that none of their babies suffer the same fate. While government hospitals would not hold prayer meetings, a daily or twice daily topical sermonette on public health, at some time when patients and relatives are gathered together, might be valuable. The audience might be invited to ask questions.



The principal newspapers are "Malawi News" (weekly) and "The Times" (twice weekly). There are also some government information publications. "Malawi News" frequently carries an article on some health matter. Both newspapers report current events relevant to health. However, the newspapers only reach a minority of the population. A Medical Officer, or other suitable person, could usefully be given responsibility for getting together items on public health for publication in the press and broadcasting on the radio (The Malawi Broadcasting Corporation). He would not compose all the items himself, and would draw them from as wide a variety of sources as possible, but he would try to co-ordinate them into a consistent campaign - rather than just let the public be bombarded with lots of little snippets of unrelated advice and information. Possibly such an Officer could be a member of a government-sponsored Public Health Education Committee, to which the newspapers and the broadcasting corporation might be invited to nominate members - to help to ensure their co-operation. A member of staff from a Teachers Training College, and some suitable members of the public should also be on such a committee. A sensible housewife or farmer on such a committee may be able to tell the experts if their ideas are unintelligible or uninteresting to the ordinary public.

Press and radio information should complement such campaigns as the "Health Week" held by Blantyre, Limbe Town Council in September 1963 and in October 1964. In these weeks there were film shows on health matters, lectures, exhibitions, posters and handouts, a "Health Poster" competition for schoolchildren - with prizes for the most original and effective designs, vaccination campaigns, and the Malawi Women's League swept and tidied markets and gave demonstrations of sanitation maintenance at Soche market and at peoples' homes.

The Malawi Young Pioneers (the elite of the Malawi Youth League) have given help in cleaning the wards and grounds at Blantyre Hospital. Such bodies might organise study groups and action groups to plan and carry out similar health "weeks",



and in other ways to create social pressure in favour of good hygiene. To have rubbish lying about near one's home or premises, or not to have a proper latrine, should become a matter for shame.

In the field of road accidents what might be described as a campaign of public health education by the Ministry of Transport and the Police led, in 1963, to a reduction in road casualties, despite an increase in traffic :

	1962	1963
Killed	142	111
Seriously injured	418	394

This was at the cost of imposing a 50 miles per hour maximum speed limit on all roads in the country.

Accidents in the home are another fit matter for propaganda. Children get seriously burned distressingly often, and poisoning accidents also occur.



## SANITATION

Legislative attempts have been made in the past to force every household to have a latrine. While a great many houses in the countryside do have pit latrines, a great many have none. Even where there are latrines, they may not be regularly used by all of the household. Many people prefer to use the countryside for defecation and urination. It is said that in some cases the man of the house uses the latrine, while the women and children use the bush. The use of the lakeshore and river beds as latrines is particularly unfortunate as these damp places are suitable for the development of hookworm larvae, the water (in which people bathe) allows transmission of bilharzia, and drinking-water is contaminated. Indiscriminate defecation, and improperly constructed latrines, increase the nuisance and danger from flies. In some water-filled pit latrines visitors are greeted by a cloud of hungry mosquitoes which probably breed, as well as rest and feed, in the pit.

In the townships, and new growing towns, adequate planning of sewage disposal is essential. All new permanent buildings should be required to have proper permanent latrines, where practicable flush latrines with water-borne sewage.

Where flush latrines are used, users must so far as possible be educated in their use. It is advisable that walls and fittings should be impermeable and covered with an easily washable paint, since people unused to the use of toilet paper may use the walls for cleaning themselves. Provision should be made for easy access to and clearing of the drains, since a variety of objects such as sticks and stones may be used for cleaning purposes and flushed down the drain. One hospital sewage system was blocked by the use of mango pips in this way - they germinated in the drains. For public lavatories under these conditions I prefer the design in which the lavatory pan is flush with the floor and the user squats. This design is much easier to keep clean and, apart from his feet being on the floor, no part of the users body need touch



the lavatory. Those who are used to "seat" lavatories can usually use a "squat" one without difficulty, whereas those who are used to squatting may dislike, or fail to understand, the seat type, and squat on the seat. Squatting is probably a more physiological position in which to defecate than sitting.

Public lavatories should be provided in townships, especially at markets and bus stations, and in or near public buildings. Restaurants, places of entertainment, churches and public halls, should be required to provide adequate lavatory accommodation for those who attend them, as should schools, hospitals and factories. It has been a sad fact that at some hospitals patients and relatives have been almost forced to use the bush, because of inadequate latrine accommodation.

In rural areas the construction of pit latrines beside traditional houses should be strongly encouraged, and every educational channel used to persuade people to use them. But warning should be given that badly used and constructed latrines can be dangerous - an inaccurately used latrine, with a floor of damp mud, can be a source of hookworm infection to people who are not wearing shoes, and latrines should not be sited where they can contaminate wells. If possible they should have a concrete floor slab for the sake of cleanliness. Floor slabs can be made so as to be moveable to another site when one pit is full. An impervious layer (cement, oiled sacking, corrugated iron) buried in the ground around the pit can prevent the emergence from their pupae of flies which spent their larval stages in the pit. The construction of such a layer should be encouraged (with full explanation of its purpose), as should the covering of the latrine hole, when not in use, with wire gauze in a wooden frame to prevent insects getting in and out. (A solid lid tends to collect condensation on its under side and, if of wood, to rot. If one can afford to be so elaborate, it is possible to have a solid lid over the hole, but a separate hole covered with wire gauze as a ventilator, under which insects trying to get out collect - attracted by the light - and eventually die).



### Persuasion or compulsion ?

Permanent houses, and institutions, must be compelled to have latrines, but it is a debateable point whether the mass of the population living in traditional houses in the villages should be legally required to construct and use latrines, and subject to prosecution if they fail to do so. Legislation on this in the past appears to have been largely ineffective - though I cannot estimate whether the number of households with latrines would be even lower without that legislation. Laws which cannot be enforced tend to bring the law as a whole into disrepute. Nor has persuasion been very effective. With rising standards of education and standards of living people tend to care more about having proper latrines, but this will take a long time to affect the whole population sufficiently.

Unacceptable laws made by an alien government have led to serious trouble in the past - particularly on agricultural matters, even though they were conceived with the best intentions. An African government, with the backing of the people, may be more successful in getting necessary measures put into force, but even an African government can become unpopular - and may have to tread warily.

A possible answer is to make this a matter to be regulated by local authority bye-laws. The central government can provide a set of model bye-laws, and encourage the local authorities to adopt them as soon as they appear enforceable. When the majority of the people in a district accept the need for latrines it becomes unreasonable that the minority should be able to subject the majority to the risks of hookworm infection, bilharziasis, and contaminated water supplies, and the minority can be compelled to conform by legislation.

In the townships it could and should immediately become an offence to defecate or urinate other than in a latrine (I understand that it already is - but the law should be enforced). (At the same time, every effort must be made to ensure that adequate latrines are available). Law enforcement must be



complementary to, and is no substitute for, education and persuasion.

### Refuse Disposal.

The townships should have, andb require householders and businesses to make use of, adequate refuse collection and disposal systems. Citizens should be required to keep the surroundings of their houses and businesses free from rubbish. Some refuse can be burned, some composted, and some will have to be dumped in suitable places. Uncontrolled dumping of refuse must be prevented - as being likely to lead to the breeding of flies and (in water filled tins) of mosquitoes.

A plant able to melt waste metal and use it for making, for ~~tax~~ instance, hoe and axe heads, might be worthwhile at Blantyre-Limbe, where the amount of refuse to be disposed of will be greatest.

Refuse bins should be provided at markets. Abbatoir wastes at major centres should be disposed of into fly-proof pits which can be sealed when full. After two years the waste should be inoffensive and can be dug out and used as manure, and the pit used again.

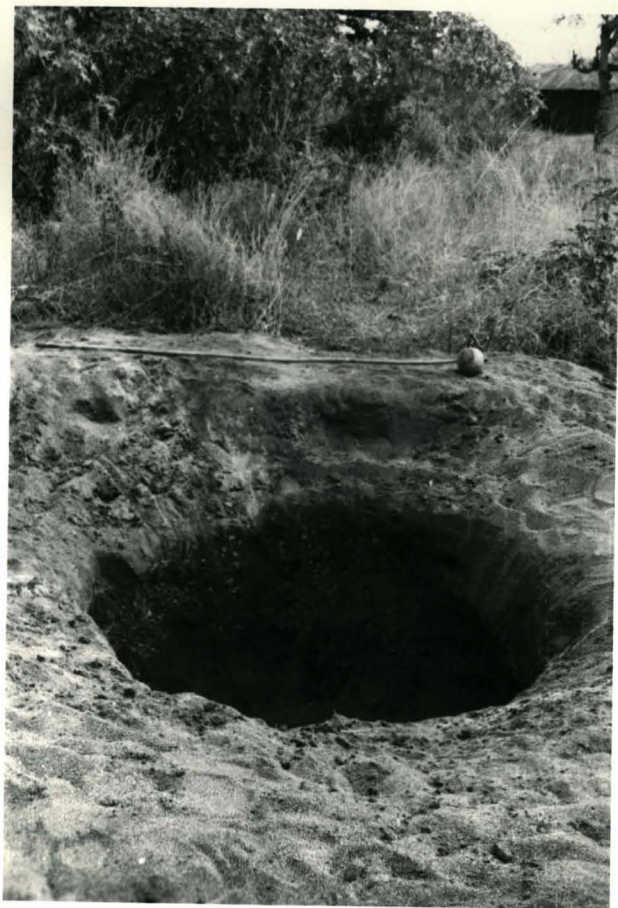
Until recently, in the countryside, such items as old tins and empty bottles were of value and were carefully conserved. Thus there was no nuisance from their being thrown away or broken at random. However, that phase is passing, and provision must be made even in more remote places for the dumping of refuse. Institutions such as schools and hospitals generally dispose of their own rubbish in pits or incinerators, but often these are badly managed - and sometimes rubbish is just tipped over a convenient cliff. Such institutions must be brought to a sense of their responsibility to set a good example. They must be helped to devise adequate ways of rubbish disposal - and compelled if necessary. So far as village rubbish is concerned, District Councils will have to take responsibility for seeing that it is properly disposed of.





### Water Supplies.

Above: Women carrying water, one in a local earthenware pot, others in buckets. The bundles of leaves (probably from a kind of palm) are for weaving into mats or making into brushes.



Left: An unprotected well at Samama, near Mpondas. Note the gourd, on the end of a long bamboo, lying on the ground. It is used to scoop up the water. Water is only a few feet down - its level varying with the season. The alternative supply is the Lake, perhaps four miles walk - a long way to carry buckets.



## WATER SUPPLIES

There are filtered and chlorinated water supplies to the larger towns, and these should be extended when possible.

In most of the country, water for cooking and drinking is carried in cans or pots from the lakes or rivers - or is obtained from open wells dug out in the soil. Such water is frequently fecally contaminated and presumably contributes to the transmission of gastro-intestinal infections. Certainly among immigrant European groups (as on mission stations) a dramatic reduction in "tummy upsets" can often be obtained by improving the water supply. Even where the water appeared to be being boiled and filtered, I have seen a noticeable improvement in health when a water supply was changed from lake water (drawn at the edge of the lake, and inevitably contaminated) to water from a protected well.

From some villages women have to walk a long way to draw water, and often have to walk through mud and shallow water, where they are exposed to hookworm and bilharzia infection, in order to get their supply.

In most lowland areas water is not far below the surface, and it is practicable, and reasonably cheap, to provide protected wells or pumps. In highland areas it may often be practicable to pipe a water supply from a suitable stream. Such supplies are a considerable advance on the traditional ones. Where there is a possibility that they may be contaminated, users should be warned of the desirability of boiling drinking water - by notices posted beside standpipes or wells, and by individual letters if water is piped to houses.

It is frequently said that Lake Malawi water is safe if taken 50 yards or more from the shore. If this could be bacteriologically confirmed then it might be practicable for lakeside communities to have water pumped from a pipe set out to a safe distance in the lake. However, the danger of currents and weather conditions carrying shore water out to the pipe end should be remembered.



## TOWN PLANNING

In general, in the past, people have erected buildings in whatever style and position seemed most convenient. Blantyre-Limbe has found it necessary to control the unauthorised building of "traditional" houses within the township. The major townships are now mainly constructed in "permanent" materials - houses of burnt brick, cement blocks, sawn timber and corrugated iron, asbestos or aluminium. In the villages most houses are of "traditional" materials - mud, local timber, and grass. But well built traditional houses, kept in good repair, can stand for 50 years or more

Within the townships, and where groups of permanent buildings seem likely to develop into townships, new buildings should have to fit in with a well considered town plan, and unauthorised new buildings, or extensions to old ones, should be prohibited. Planning should be basically the responsibility of the local authority, with advice from, and subject to the approval of, the central government.

In planning regulations fire hazards should be borne in mind. So far as possible permanent buildings should be of fireproof materials. The temptation to put a layer of grass on top of a permanent roof, for the sake of coolness, should if possible be resisted. Experiment is needed to find other cheap ways of achieving this effect. Perhaps the spraying on of plastic (such as is used to protect the guns and other structures on the Loch Long "mothball fleet") might be practicable. There is a considerable fire risk in the large and growing villages of grass-roofed houses. The application of regulations governing the space to be allowed between buildings could be of value. Perhaps 50 yard fire breaks could be left at intervals as villages expand. Even if regulation is not practicable, propaganda might be of value. The clearing of bush around houses can be a valuable protection against fire. From the point of view of agriculture and forestry the practice of burning the bush (all the annual growth of grass and other vegetation) is causing considerable



concern. This is a serious problem for the government. But if burning is successfully prevented one year, and then a fire is accidentally started the next year, at the height of the dry season, the resulting blaze can be much greater than normally experienced and might menace any village without a good fire-break around it.

Despite the theoretical existence of a "government reservation" on each side of main roads, ribbon development - of traditional houses - has tended to take place. This is most undesirable and should be prevented by regulation, as a main road extending for miles through an elongated village is trying for vehicle drivers and creates a hazard for people and animals on the road - particularly for children playing on the road. The tendency to build your house near a road is natural, but loop roads, or roads at right angles, should be constructed off the main roads in areas of settlement so that houses can be on a road and accessible to the main road, without actually being on the busy route.



## FOOD HYGIENE

Regulations such as are applicable in highly developed countries are not yet suitable in most of Malawi. In the townships, for a start, perhaps by local bye-laws, the standard of raw milk sold to the public should be regulated. Initially it might only be possible to issue certificates to those milk sellers who prove that their milk reaches a satisfactory standard, and advise members of the public to buy "certified" milk only, and if they buy uncertified milk to boil it before use. Pasteurisation of milk supplied by any large dairy undertaking should be encouraged.

So far as most other foods go, regulations should merely stipulate that food exposed for sale to the public must be of the nature advertised and fit for human consumption. While this is vague, it would enable action to be taken against any serious abuse.

### Treatment of food with insecticides.

It is a frequent practice to dress maize and beans, for storage, with D.D.T. powder - to preserve them from infestation by weevils. Weevils are a serious menace, spoiling unprotected stored food, but in view of the growing evidence that chlorinated hydrocarbon insecticides (D.D.T., gammexane, dieldrin etc) are stored in animal tissues and are causing, for instance, serious effects in birds which have consumed small quantities over a long time (Carson, 1962), it might be well to investigate how much of these insecticides remains in food prepared from dressed grain or beans, and whether a safer insecticide, or a different method of storage, could be used. If pyrethrum should prove to be safe and effective it could probably be grown and manufactured in Malawi.

The fact that no immediate ill effects are noticed after food containing D.D.T. is eaten does not mean that chronic illness, not easily traceable to that cause, may not develop in those who regularly eat such food. Those liable to be affected



by ill effects from such insecticides include students at secondary schools and colleges, and labour provided with food by employers. The continuous provision of satisfactory food over the whole year in institutions can be a serious problem, and spoilage in storage is frequent.

### ALCOHOL AND TOBACCO

The use and abuse of alcoholic drinks involves medical and social problems and is another matter for public health education. Local beers and palm wine probably contain valuable amounts of B complex vitamins, but these can be obtained from other sources and chronic alcoholics may suffer vitamin deficiency diseases. The government has shown itself aware of drunkenness as a social evil, and forced an industrial concern which started to supply cheap beer in beer halls, which led to much drunkenness, to stop doing so.

Beers are made from all of the local staple carbohydrates, and at times use of grain for beer making may contribute to food shortage. Palm wine is usually made by a method which involves killing the palm trees, and in areas where no effective control is exercised virtually all the palm trees may be killed in this way. The resulting graveyard of dead tree-trunks sticking up into the air is aesthetically unpleasing - but there are other ill effects also. In one such area a local African told me that since the palm trees died the monkeys, which used to eat palm nuts, had taken to raiding crops. In times of hunger the children also used to eat the rinds of the palm nuts - which are no longer available. The nuts were also used as fuel for burning while smoking fish. In 1963 in the Mkope Hill area virtually all the palms were dead, but in the neighbouring Mpondas area, under a respected Moslem chief - who disapproved of the killing of palm trees for this purpose - most of the trees were intact. A system of requiring people who wished to use palm trees to buy a licence for each tree had little effect. Even if the fee were paid, considerably



more could be made from the sale of the wine. I understand that in parts of Africa a method of obtaining palm wine without killing the palm has been developed, but that an attempt to persuade people in Nyasaland, in the past, to use it, failed. Possibly their own government might be better at persuading the villagers in Malawi to conserve their natural resources than the Colonial government was.

Locally distilled spirits (Kachasu, "Malawi gin") have been illegal in the past, but were widely drunk. Now there are moves to licence their production - probably more sensible than prohibition. A number of cases of cirrhosis of the liver are probably due to drinking too much kachasu.

The introduction of "European" beer and spirits has in some places led to increased drunkenness, and has led to some people getting into serious financial difficulties through spending too much of their money on it. The whole subject is a very thorny problem for any government.

Probably cigarette smoking has not yet done much serious harm in Malawi, but cigarettes are very cheap compared with most countries and a lot are now smoked. Tobacco is an important crop, so that there is a vested interest in the continuation of smoking - at least in the countries which buy Malawi tobacco. The dangers of smoking should be mentioned in public health education, and particularly in school hygiene classes, and the idea should be fought that to smoke is a sign of adulthood. For those who insist on smoking, the lesser danger from pipes and cigars might be stressed.

Cannabis indica is used by a few people, but is not a serious problem.





Boy about seven years old. Likwemu. December 1958.

This child has oedema of the lower part of his body, and gross ascites. The upper part of his body shows wasting. The picture is suggestive of wet beri beri. He was made more comfortable by the removal of 10 pints of fluid from his abdomen, through a needle.

When I showed this slide as malnutrition at the Liverpool School of Tropical Medicine and Hygiene in 1961, some of those present strongly suggested that the cause of his condition was likely to be portal venous obstruction. Such obstruction might be due to liver damage from malnutrition, or from deposition of bilharzia ova in the liver.

I have often thought that it would be of mutual benefit if some patients from Malawi, with locally difficult or insoluble diagnostic or therapeutic problems, could be flown to, for instance, Scotland for specialised investigation and treatment. The patient would have a chance of cure or alleviation of his condition, not available in his own country, and Scottish staff and students would gain experience of conditions not frequently seen here. A hospital here taking such patients might profitably employ some student nurses from Malawi, who would know the patients' languages and background.



## NUTRITION

One sees occasional cases of kwashiorkor and of marasmus among young children. Subnutrition is frequent, some patients showing symptoms of protein deficiency, pellagra, beri beri and vitamin A deficiency. Much of this could be avoided by the proper use of foodstuffs already available, and is presumably due to ignorance and preventable by education.

The effects of malnutrition are enhanced by gastro-enteritis and parasitic infections, which again can be prevented by education and improved hygiene.

There have been partial studies of the diet and nutritional state of the population, but a complete and up to date study - which might appeal as a project to an international body or a foreign University, could be of great value in suggesting how to make the best use of the foods available, and what crops or products would be most suitable to supplement present diets.

In any research into nutrition, with a view to recommending ways to improve the diet, account must be taken of dietary customs and taboos, and tests made of the acceptability of any recommended changes. There is considerable scope for ~~the~~ an increase in the harvest of fish, but the problem may be distribution to areas remote from the lake. Ways of improving the traditional methods of smoking and drying might be valuable. In some parts of Africa a fish flour has been found acceptable. Tests might be made of its acceptability in Malawi.

The extent to which malnutrition is responsible for certain illnesses, for instance cirrhosis of the liver, is uncertain. I have wondered whether some unexplained paralyses may be due to a dietary factor. A full study of the national diet might elucidate these problems.

(See also "FOOD IN MALAWI", page 172).



# INDUSTRIAL HEALTH (See also page 42)

While industrial undertakings should be required to take reasonable safety precautions, and encouraged to provide medical and welfare services for their workers, it would not be appropriate to lay such a burden of requirements upon them that they might be deterred from operating - and so from providing employment at all.

On this subject the Prime Minister was reported in "Malawi News" as having said, on 14/2/1964, at the opening of an International Labour Organisation course at Blantyre,

"If I did everything as a government that I.L.O. says, well most of the employers will leave the country."

"I.L.O. says an employer must provide houses, must provide medical services himself." "In my view it is the duty of an African government anywhere to see to it that as many people are employed even if they do not have all the benefits that the I.L.O. says they should have. People want jobs. They are not primarily interested in medical care, housing...."

"Malawi News" on July 10th, 1964, reported the Ministry of Health as listing industrial medical units in the country as:

Nyasaland Railways: Private hospital at Limbe  
Dispensary at Monkey Bay  
Dispensary at Balaka

Imperial Tobacco Company: Dispensary at Limbe

Lujeri Tea Estates: Dispensary at Mlanje

Chombe Tea Estates: Dispensary at Nkata Bay

Chikongwa Forestry Department: Dispensary at Mzimba

Nchima Tea Estates : Dispensary at Cholo

Any major extension in industrial health, with pre-employment or regular medical examination of workers, in the immediate future, would probably only be possible if the government provides the service - with the co-operation of employers.



## DRUG COSTS

According to "The Sunday Times", 26/4/1964, the British Ministry of Health has obtained tetracycline from Poland at £4.8/- for 1000 tablets, about one tenth of the price quoted by British manufacturers. In Malawi in 1962 the cost was about £11 for 100 tablets (supposedly at wholesale prices). Such a price difference may greatly affect the ability of the health services to make the best treatment available to patients. It may well be felt that chloramphenicol at 16/- per 100 capsules must be used, despite the risks involved, rather than tetracycline - in cases where the latter would be preferable were expense no object.

However one may sympathise with British and American firms which have borne research costs, and want to recover these from drug prices, the saving of lives and prevention of suffering in Malawi may depend on drugs being cheap, and low costs and discounts should be sought anywhere in the World, subject to quality being adequate.

Care should be taken that drugs from varied sources are clearly labelled in a way which indicates both the drug and the dose in a form understood by local medical staff. (For instance a Medical Assistant who knows how to use "Anthisan" tablets, 100 mg, may be puzzled by "Mepyramine maleate, 0.10 gr" - which is the same thing from another manufacturer). The use of the abbreviation "gr" for gramme by some manufacturers and for grain by others is dangerous, and ambiguously labelled drugs should not be allowed to reach medical units.

### Local production of medical supplies.

Costs might be reduced, and the national economy helped, by the local manufacture of those items which can readily be made in the country. Since the country grows cotton, it should be possible to organise local production of cotton wool - a surprisingly expensive item, and one which is used in large quantities.



Cotton and kapok for the stuffing of pillows and mattresses is of course available locally, though stuffed mattresses are not ideal for hospitals. It might be possible to use local cotton to make both bandages and sheeting in Malawi.

Large amounts of yeast are used, as powder and as tablets, as a vitamin supplement. It is the practice to give leprosy patients a spoonful of yeast weekly or twice weekly when they get their "Dapsone" tablets. It should be possible to produce this in Malawi.

Castor Oil plants grow well in Malawi. The possibility of producing castor oil locally (for use in ointments and eyedrops, as well as its use as a purgative) might well be investigated.

The practicability of an essential oils industry has been discussed in the past. (A man, whom the Nyasaland government wished to experiment with this, was refused a residence permit by the Federal government ). Most of the production would be for export, but some might be used in local production of medicines.

It should be possible for the country to produce its own requirements of ethyl alcohol, so removing the need to import methylated spirit, surgical spirit, laboratory alcohol and alcohol for medicines.



## LAY MEDICINE

### First Aid and self-treatment.

The teaching of first aid should be encouraged at teacher training colleges, in the youth organisations, and for interested members of the public. A National First Aid and Hygiene Certificate might be instituted for people to work for.

A simple medical box in a school or factory can enable a teacher or foreman to treat slight abrasions with Bonney's blue, or gentian violet paint, saving the loss of working time while a child or workman goes to a dispensary - and guarding against the development of infection.

The reasonable use of simple medicines purchaseable in the stores would be a suitable subject for newspaper and radio health education series, with emphasis on the desirability of seeking medical attention for serious conditions, and on the dangers of unskilful or irrational self-treatment - and of delay in seeking skilled attention when it is needed.

Accidents for which first aid is commonly required include burns, particularly to small children and to epileptics, injuries to hands and legs from agricultural implements and tools, and from thorns, fractures (most often of wrist, arm and femur - from small boys falling out of mango trees), and snakebite. Drowning can also occur. In teaching first aid for these, emphasis should be placed on prevention being better than cure. Warnings should be given about what not to do, as well as teaching of what should be done. For snakebite the traditional first aid is to give a locally made emetic to make the victim vomit up the poison. The emetic can put the patient into a state of collapse. "European" type first aid, by hacking the bite with a razor blade and applying a tight tourniquet, is also generally unhelpful. But it is very difficult to persuade people that non-interference is the best policy.



### The sale of medicines to the public.

Regulations for the control of dangerous drugs (of addiction) already exist on the British pattern, and can be modified to suit local conditions. Chemists shops are found only in the larger towns. Local stores stock a variety of medicines, and where no medical unit is near the ability to get antimalarials, aspirins and antacids, from the store may be very valuable. But abuse of store medicines, particularly of purgatives, often occurs - as in most other countries - encouraged by advertising.

I would recommend that medicines on sale to the public should be strictly required to bear on their label a clear statement of their active ingredients, of what conditions they are intended to be used for, of the reasonable dose, and of any important contraindications and dangers from overdosage. Extravagant advertisement of proprietary remedies should be prohibited.

Such regulations would not apply to locally made African traditional medicines normally sold in villages and at markets. While some of these may be harmful, they are a traditional feature of local life, greatly valued, and should not be interfered with without careful study and good reason. Again, purgatives are popular - and may be misused. A colleague heard an African villager extolling some locally made pills to a friend in the words "They are wonderful ! You sit on the latrine for days ! "

The postal supply of medicines to the public from other countries, through newspaper advertisements and postal circulars, ought to be banned. Such advertisements are often fraudulent, claims of great therapeutic power being made, and high prices being charged to gullible people who can ill afford them, for preparations which may consist largely of methylene blue - the principal effect of which is a dramatic change in the colour of the urine.



### Correspondence courses.

The desire for education and qualifications is exploited from South Africa and elsewhere by "colleges" advertising "home nursing" correspondence courses, with the award of an impressive looking certificate on completion of the course. Local advertisement of such courses should be banned, except where an individual course may be approved by the Ministry of Health or of Education as being properly conducted and giving fair value for money, and public warnings should be given of the foolishness of responding to such advertisements in foreign newspapers or magazines.

Persons wishing to advertise medicines or medical courses for postal supply from an address within the country should be required to obtain prior approval, from the Secretary for Health or an official appointed by him, for their product and for the form of their advertising.

### PATIENT'S RECORDS

Hospitals naturally make case-notes about patients. These are often of great value when a patient needs treatment again - but can frequently not be found, or the patient may go to a different unit. Small units which are at present unable to maintain good filing systems from which old records can readily be found, might give patients their case-notes, in a strong envelope, to take home with them on discharge. Patients would be urged to bring the notes if they ever have to visit hospital again. Naturally, confidential letters, which the patient ought not to see, would be excluded from the notes, but these are few. Some records would be lost, but some at least would be preserved by their owners and available again when needed. Larger hospitals with better record systems might give patients, on discharge, a letter, to retain in this way, with a summary of history, findings and treatment.



## SPECIALIST SERVICES

The Ministry of Health establishment list as at 1st August 1964 (see pages 28 and 29) lists clinical specialists in the country at that date as:

- Surgical Specialists (two)
- Medical Specialist
- Anæsthetist
- Ophthalmologist
- Obstetrician/Gynaecologist
- Leprologist

A total of seven specialists for the country. Vacant posts were

- Tuberculosis Specialist
- Radiologist
- Psychiatrist

The posts of Public Health Laboratory Director, and Public Analyst, were also unfilled.

An American Tuberculosis specialist has since arrived with a Peace Corps detachment.

Specialists are generally based at Blantyre and visit other centres. The psychiatrist, when there is one, is based at Zomba Mental Hospital.

For such services as radiotherapy and cardiac surgery patients have to go to other countries - normally to Salisbury in Southern Rhodesia.

Probably specialist staff as outlined above, with the vacant posts filled, is as much as the country can at present afford - on the clinical side. This small number of specialist staff means that only a minority of those cases warranting, by modern standards, specialist attention, can ever get it. This is partly compensated for by the tendency of General Medical Officers, and Mission M.O.s, to "specialise" in lines which particularly interest them, and to develop a wider range of abilities than a doctor normally has the opportunity to do in the more advanced countries. But a great deal of mortality and morbidity which could be prevented with



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modern skills and equipment cannot be prevented. In particular a doctor from an advanced country misses the ready availability of biochemical and bacteriological reports.

If one were to add to the list of specialists, a paediatrician would be of great value, and ideally the Public Health Laboratory should have a pathologist, a bacteriologist and a biochemist, rather than only one Director responsible for all these fields. But perhaps the most notable lack is of a medically qualified specialist in public health and preventive medicine (though of course the leprosy and tuberculosis specialists do preventive work in their fields). The nearest approach to this is the Chief Health Inspector.

### DENTISTRY

For most of the population, Medical Assistants draw painful teeth. There were in August 1964 three government dentists, and one vacant post. There were perhaps two dentists in private practice. For the moment a comprehensive dental service has too low a priority to be provided, but there is likely to be an increasing demand for proper dental services - with the rise in the standards of education and of living, and an increase in the need for such services - with the increasing use of European-type foods. Recruitment of foreign dentists, and training of local people abroad as dentists, should be accompanied by propaganda to encourage people to have teeth preserved rather than removed, and by the teaching of dental hygiene in the schools. Economic fees are likely to be necessary to cover the cost of dental services, perhaps with free treatment for such groups as children at school and expectant mothers attending ante-natal clinics - where it is possible to offer treatment to these groups. The training of Dental Assistants, to help dentists and do simple fillings, might be considered.



## RADIOGRAPHY

Many centres, such as District Hospitals, now have X ray machines, but a great many of the X rays taken on these are a waste of time and money through unskilful photography and developing by Medical Assistants or Medical Officers who have had no adequate training in radiography. While such staff can learn, in time, to take reasonably good X rays, competent radiographers could generally do much better - and the few doctors generally have plenty of other work to do. Students should go abroad for training as radiographers, and the training of local X-ray Assistants should be considered - but the latter might be difficult while the post of government radiologist remains unfilled.

At some units which have (and require) X ray facilities there would not be a full time job for the X ray Assistant, so that such staff might also profitably be trained in another job. In Ghana such staff have also performed physiotherapy. Laboratory work might also be a suitable second job.

## PHYSIOTHERAPY

Very little of this has been available in the country so far. Physiotherapists could greatly assist in the treatment of many patients, particularly in the rehabilitation of those crippled by leprosy or by accidents, and of amputees.

In addition to the training of physiotherapists abroad, the local training of physiotherapy assistants for the larger hospitals, and leprosy settlements, would be of value. These could help with the treatment of the frequent fracture cases who need to be a long time in plaster or in splints, with the mobilisation of limbs scarred from severe burns, with the management of deformities in children (club foot, paralysed legs), and with leprosy patients. Many persons with injured or deformed hands or feet could benefit from help in making these more useable.



## SOCIAL WORKERS

The health service may as yet have no almoners or psychiatric or other social workers, but I believe that the need for them will become more apparent within the next few years, and that students should be sent abroad now for training.

There are many cases where people are reluctant to spend a long time in hospital because of the needs of their families. This may particularly apply to tuberculosis and leprosy patients, but can apply to many mothers - for instance. There are other cases where some assistance with the purchase of proper food might save people from needing hospitalisation. For the larger hospitals, almoners might well help with these problems. Now that fees are being charged for treatment, the task of discovering who genuinely cannot afford to pay fees might also, at large units, be delegated to almoners.

## CHILD AND YOUTH GUIDANCE

The provision of help and advice such as is given in British child guidance services might be very valuable to many schoolchildren and students to enable them to resolve the difficulties which prevent many from making the best use of their educational courses - and cause some to fail altogether in these courses.

A young person subjected to both traditional customs and beliefs and schooling in European/American ideas may be subjected to severe conflict and frustration. In particular, immediate sexual desire, and desire for marriage and children, may conflict with a realisation that to get on in the modern World it is better to wait until formal education is complete and then seek a marriage partner of comparable educational and social standards.

A desire to rise quickly to a high educational and social position may conflict with subconscious uncertainty about ability to reach and maintain the necessary standards, and with failure to do well in class. While students are normally better fed, better looked after medically, and in better health than the



general population, some tend to worry greatly about their health and complain bitterly of symptoms for which no physical cause can be found. While hysterical or functional illnesses are met with in the general population, ~~ixxxxx~~ most of the cases I have seen were among relatively well educated youths and girls - particularly teacher training students. I was particularly impressed by the number of such cases in which one could prod the uvula and the back of the throat of the patient without provoking any gagging reaction or any apparent discomfort.

There is a condition among young women, well recognised among the general population ("Majini" and other names), in which the patient starts screaming and throwing herself about, and may complain of severe headache and of "seeing things". I have seen an epidemic of this among senior schoolgirls, and occasional very similar cases among educated young men.

Understanding support to pupils might well increase the proportion who successfully complete their courses. Of course, school and college staff give such support to some degree, but it might well be valuable to set up a counselling service to supplement their efforts. I believe that such a service might more than pay for itself by reducing wastage of expensive higher education.

One or more expatriate educational psychologists might be recruited to start such a service, in co-operation with local staff, while as soon as possible two or three Malawi teachers should start training abroad as educational psychologists. In the absence of a suitable educational psychologist a local or expatriate teacher or doctor, with suitable qualities of insight, tact, patience, and a capacity for friendship and for inspiring confidence, might be sought.



## MENTAL HEALTH

There is a considerable volume of mental illness among the population, but comparatively little has been done for it by the health services. Disturbed patients are frequently treated with "Largactil", which is of value - but does not generally produce lasting cure in serious conditions. Patients causing serious nuisance to their relatives and friends are removed, sometimes, to Zomba Mental Hospital, which also uses a lot of "Largactil" - and some elektro-convulsive therapy.

Research into the best way to handle local forms of mental illness is needed, but may well not get done effectively until enough African doctors have been qualified for a long enough time to become psychiatrists. The present toleration of persons with reasonably harmless abnormalities among the general population is valuable, and no attempt should be made to institutionalise such people - but, where there is a chance of success, attempts should be made to bring them back to normal productive life and work.

In the development of mental health services the mistakes made in Europe in the past should be avoided. It is probably preferable to attach psychiatric units to general hospitals, rather than to extend, or build more, mental hospitals, when facilities for psychiatric treatment can be expanded.

The admission of mothers to hospital with their sick children has been hailed in Europe as a great advance in guarding the emotional health of the children. For practical reasons this has generally been done in Malawi, and should continue.



## BLOOD TRANSFUSION

Only at Blantyre, Zomba and Lilongwe have blood transfusions normally been readily available when needed. Even there the supply of blood has depended on volunteers from, frequently, the police. These centres require blood banks, and all M.O.s should have Eldon cards available for quick grouping of patients, and a register of people willing to give donations in an emergency should be built up.

Such groups of healthy young people as secondary school pupils, students, police and soldiers, might well have their blood groups determined en masse, and be issued with cards carrying their name and group and bearing simple information on how transfusions can save lives and on how they affect the donor.

The equipment of theatres with sterile transfusion bottles containing anticoagulant and a filter, in centres where blood from donors is not readily available, can enable patient's own blood to be given back to them in cases of intra-abdominal bleeding.

For the future, the possibility of obtaining hyper-immune gamma globulin, from donated plasma from immune donors, for treatment and prophylaxis of such conditions as measles in weakly children, and neonatal tetanus, could be borne in mind. The packed cells left from the use of plasma could be of great benefit, life saving, probably, in some cases, to patients with severe anaemia (generally women and children with severe hookworm disease). Some patients have, by European standards, incredibly low haemoglobin levels, their conjunctivae appearing white and their haemoglobin registering as 10% or 20% on the Tallquist blotting paper method. A colleague has told me of such a patient dying on the journey from a lakeshore clinic to a mountain hospital, presumably from the fall in the partial pressure of oxygen in the air over a few thousand feet rise in altitude.





Boy with anemia from hookworm infection. Mkope Hill.

This anæmic boy, photographed in August 1963, suffered from hookworm infection and malnutrition. When one sees a pale skinned African in a queue of patients in Malawi, the immediate "differential diagnosis" is between severe anæmia which, when chronic, seems to lead to hypopigmentation in many cases, and an origin in Southern Rhodesia or South Africa - where skin pigmentation tends to be lighter than in Malawi. The puffy eyelids and face are typical of cases - usually children, and women of childbearing age, of anæmia from severe hookworm infection. (Some children with the nephrotic syndrome have a rather similar appearance).

The smartly dressed (and well pigmented) boy in the background is in the new clothes given to him after his initiation into manhood (circumcision in an initiation camp).



## ANÆMIA

The widespread anæmia is presumably due to a combination of infection with malaria, hookworm and bilharzia, and subnutrition. Women and children tend to be worse affected than men. Presumably menstrual blood loss contributes to this, together perhaps with the first call of men on available food. Also, women tend to be more exposed than men to the parasitic infections. They draw water for the family, and probably do most of the washing of clothes and utensils in the lakes and rivers. They bear children.

People frequently carry on their normal occupations with hæmoglobin levels of 50% to 70% Tallquist. Presumably this reduces their working capacity.

The low hæmoglobin of pregnant mothers must presumably add to the risks of pregnancy and childbirth for both mother and child.

The ultimate answer must be the elimination of the causes - the infections and subnutrition - in other words, public health education. For individual patients, treatment of their infections, plus ferrous sulphate, often produces rapid improvement. It is important to get women to attend ante-natal clinics regularly.

Iron by injection, liver extract injections, and folic acid tablets, tend to be tried rather indiscriminately on refractory cases of anæmia. While it is not practicable to investigate each case adequately, it might be valuable if a circular could be produced for staff at the smaller units advising how such cases should be treated - based perhaps on an investigation of a representative sample of cases, plus a review of relevant literature from other countries. Such advice might relate, in particular, to pregant women and to infants.



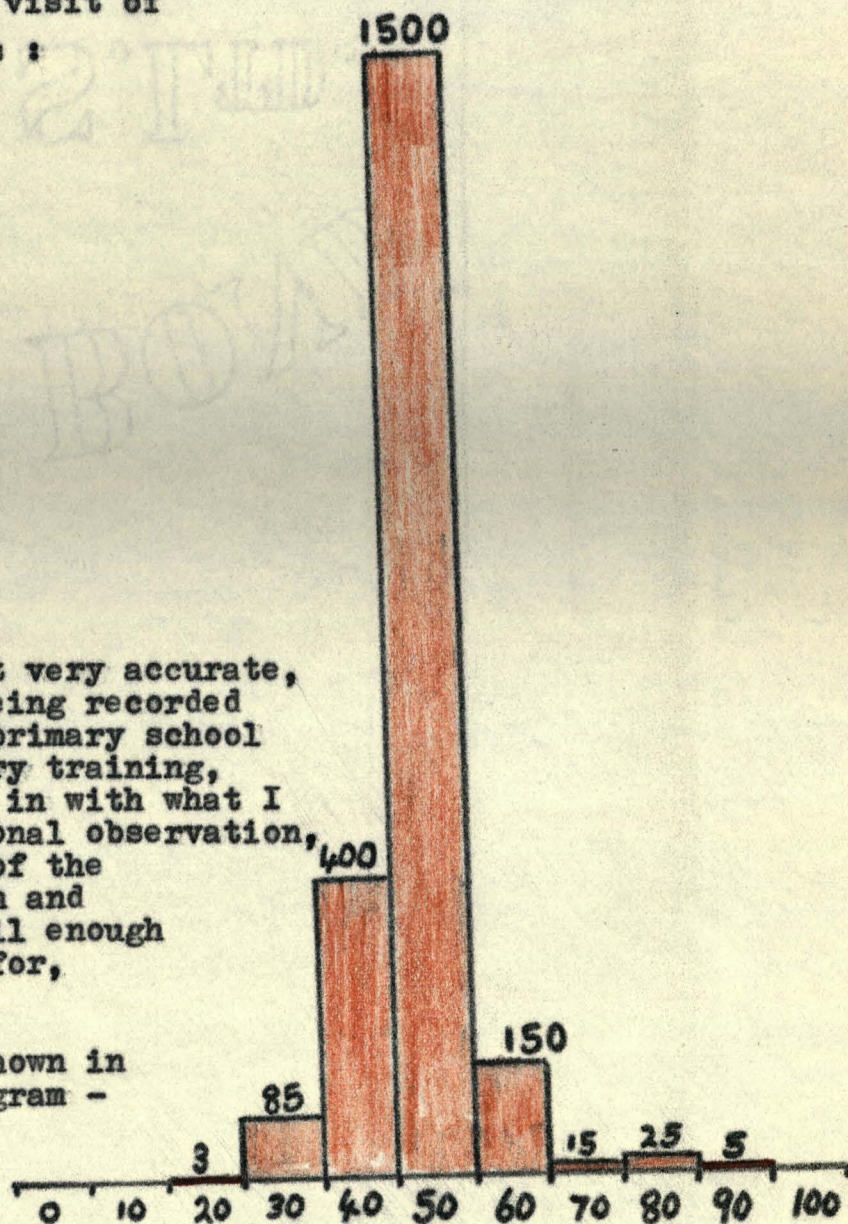
# HAMOGLOBIN LEVELS OF OUT-PATIENTS

At my request, during 1959, Mr Geoffrey Chioko, Medical Assistant, and his staff, recorded the haemoglobin levels, estimated on the Tallquist scale (blotting paper method), of as many as practicable of the out-patients attending their unit (Mkope Hill Dispensary). Of 3,000 individuals attending as out-patients during the year, they recorded the estimated haemoglobin levels of 2,183 (normally estimated on the first visit of the patient) as follows :

Above 100%.....	0
About 100%.....	0
" 90%.....	5
" 80%.....	25
" 70%.....	15
" 60%.....	150
" 50%...	1,500
" 40%.....	400
" 30%.....	85
" 20%.....	3
Below 20%.....	0

While the method is not very accurate, and the results were being recorded by people with only a primary school education plus auxiliary training, the picture given fits in with what I would expect from personal observation, remembering that most of the patients would be women and children who were unwell enough to seek, or be brought for, attention.

The results are also shown in the accompanying histogram -



Ordinate = numbers of patients.

Abscissa = haemoglobin percentage. (Diocese of Nyasaland, 1960).



## IMMUNISATION

Smallpox is a perennial problem. "The Times" (of Blantyre) reported on 20/3/1964 that "so far this year" there had been 181 cases with 14 deaths. Reported numbers of cases probably do not reflect the true incidence. Though figures are probably more complete nowadays, it is only five years since I had a good example of their incompleteness. I came across a smallpox patient in a group of leprosy out patients. I asked him whether anyone else in his village had suffered from the same disease. He replied "about thirty". The Ministry of Health had no record of smallpox in that area. The disease could be eliminated by effective vaccination of everyone in the country. The Ministry of Health is aware of this and has vaccination campaigns, but coverage of the whole population requires considerable organisation. Until 1963 vaccination teams could meet with difficulties because of their association with the Federal government. I would recommend the vaccination of all schoolchildren on school entry and on completing primary school. Remote areas, to which ordinary vaccine cannot readily be taken, refrigerated, should get freeze dried vaccine. I fear that in the past a lot of dead vaccine must have been used in vaccination - having seen out of date and unrefrigerated liquid vaccine in use.

B.C.G. vaccination against tuberculosis should be given to contacts of cases and to others at risk (medical staff), and to all primary school children, apart from those found mantoux positive if mantoux testing is done. Probably mantoux testing ~~when~~ should be done, but I have heard a tuberculosis specialist argue that no great harm would be likely from omitting it, and that mass vaccination of schoolchildren could be greatly speeded up by omitting testing. B.C.G. vaccination may give some protection against leprosy as well as against tuberculosis.

Whooping cough is responsible for considerable mortality and morbidity among young children. Vaccination against it should be made available to all children attending child welfare clinics,



and its advantages should be advertised in press and radio propaganda - together with the necessity to complete the course of injections in order to get protection. If finances allow, a combined whooping cough/tetanus, or whooping cough/tetanus/diphtheria vaccine might be used. Tetanus certainly occurs, but I have not seen diphtheria. However, even if diphtheria is rare in Malawi now, we have no guarantee that it will remain so - and children from Malawi might be at risk when visiting other countries in later life if they are unprotected.

Neonatal tetanus occurs quite frequently, and tetanus immunisation of expectant mothers has been advocated as a precaution against it. But it is likely that mothers willing to come for the course of injections would also be willing to learn how to prevent the danger of neonatal tetanus - and we should avoid giving non-essential treatments to pregnant mothers. Tetanus immunisation should be given to police and soldiers, and any others considered specially at risk.

Yellow fever vaccination is required for travellers. The risk of yellow fever virus being carried by a traveller to Malawi (or by mosquitoes in an aircraft) from another African country should be remembered, as conditions would be suitable for the transmission of the disease. While I have never heard of a case in Malawi, mouse protection tests have, in the past, indicated the presence of yellow fever antibodies in the population of some areas - including Liwonde and Lilongwe (East Africa, 1950).

Poliomyelitis immunisation should be strongly urged for immigrants from more developed countries, and recommended for the children of the growing number of local families observing high hygienic standards, but among the general population repeated infection in infancy, with resulting immunity, is probably universal. A number of two to three year old children develop paralysis, but most recover well.



Enteric fevers occur occasionally throughout the country, and T.A.B. vaccination should be urged for immigrants from more developed countries.

Cholera vaccination is required for pilgrims going to Mecca.

Plague recently occurred in one area. Plague vaccination might be considered for medical staff dealing with any future outbreak, and for households and neighbours of those affected, but chemoprophylaxis might be judged less unpleasant and more effective.

Rabies vaccine is frequently required for people bitten by rabid or suspected animals. But the majority of those bitten by dogs do not in fact get vaccine (and do not develop rabies). However, occasionally human cases of rabies do occur - and all those bitten should be urged to get vaccine treatment immediately, and persevere to the end of the course, if there is any possibility that the animal was rabid. Annual vaccination of dogs is an important preventive measure. The worst incidents occur from rabid wild animals (one rabid leopard managed to <sup>injure</sup> ~~kill~~ 24 people before it was killed).

Measles is another serious menace to young children in Malawi, and if an effective safe vaccine against it is developed then vaccination of young children should be carried out as against whooping cough.

#### Passive immunisation and antisera for treatment.

Hospitals should possess tetanus antiserum and snakebite antiserum. The only infant whom I have seen survive neonatal tetanus was given antiserum prophylactically before symptoms of tetanus developed - because there had been other cases locally and he had a dirty ulcerated umbilicus.

Most cases of snakebite do not need antiserum, and recover well with rest, reassurance, and elevation and cooling of the leg, together with analgesics, sedatives (I used antihistamines), and antibiotics, if necessary. But where antiserum is needed the need is likely to be urgent.



Rabies antiserum may be required for seriously bitten patients, where vaccine might not have time to work.

#### CEREBRO-SPINAL FEVER (Meningococcal meningitis)

This once caused serious trouble in Nyasaland, but is little in evidence now. We do not know why it disappeared, so should beware that it may return without our knowing why. Conditions seem suitable for its spread.

#### CONGENITAL ABNORMALITIES

Health education should lead mothers with abnormal infants to seek help early, rather than accept defects (club foot, hare lip, congenital heart disease) fatalistically. While the problem is minute compared with the general health problems of the country, care for individuals is still necessary. Though remedy may often be beyond the scope of the services the country can provide, in some cases defects can be fairly easily alleviated (as with a simple hare lip) and in others it may be possible to arrange trips to other countries for remedial treatment.

The prospects tend to be worst when treatment must be long continued. I have known a grandmother end the treatment of an infant for club feet, after many months, by the argument that if God had wanted the child to be able to walk correctly He would have given him proper feet.





Taking blood for investigation into O'Nyong nyong.  
Mkope Hill, June 1962.

The virus disease O'Nyong nyong, believed to be spread by the bites of anopheles mosquitoes, was first recognised in Uganda in 1959. The typical picture includes fever, pain in the bones and joints, a measles like rash, conjunctival inflammation and enlarged lymph nodes. Complete recovery is normal, with or without treatment, after about a week. The disease appeared in the Fort Johnston District of Nyasaland late in 1961, and caused a major epidemic in 1962. Locally it acquired the names "Kabadula" (short trousers), and "Goola" (harvest, cut down), from the severe pain in the knee joints which "cut people off" at the knees - so that they could not walk. At the request of the East African Virus Research Institute, Entebbe, Uganda, I sent some 60 refrigerated blood samples, from local patients and others, to the Institute. Living virus was isolated from two of the samples, and antibodies to the infection were found in the serum of 22 out of 36 other samples. (Diocese of Nyasaland, 1962, 1963).



## MOSQUITOES

Apart from the anopheline role as vector of malaria, mosquitoes carry filariasis and O'nyong nyong (and possibly other virus diseases), and Aedes could carry yellow fever if the disease were introduced. Cases of African lymphoma (Burkitt tumour) occur in children in Malawi, and suggestions have been made that it may be associated with a mosquito borne virus (Booth, and others, 1964).

Massive numbers of mosquito bites cause distress, especially to children, and scratched bites becoming infected may be one way in which the tropical ulcers, which afflict so many people, are initiated. Quite apart from malaria control, reduction in mosquito numbers would be valuable in making people's lives more comfortable. There are areas where human settlement is discouraged by mosquito numbers.

The removal, or rendering unsuitable, of breeding places near houses and villages should be a main line of attack. Small breeding places such as old tin cans, which should be removed, and holes in trees, which can be filled with mud or cement, are often important.

Where large swamps exist near villages a joint operation, involving agricultural, fishery, engineering and medical staff, and self help from the villagers, might turn these wastes into useful agricultural land. Regulated water channels and ponds, used for drainage and irrigation, might also allow fish harvesting and permit less mosquito breeding than the present massive swamps. (Appropriate species of fish might keep down the larvae, and smaller areas of deeper water, free from overhanging foliage, would allow less breeding than the large areas of shallow water covered with thick foliage). I believe that food production from fish and agriculture must generally take priority over mosquito elimination.

The spraying of swamps with oil and insecticides is sometimes urged. In my view, this is likely to do more harm



than good. One spraying will probably only eliminate mosquito larvae for, at most, a few weeks. Repeated spraying would be necessary for a lasting effect - and would be a continuing and heavy expense. Not only mosquitoes would be killed, but much of the insect life - the long term ecological results of which might be difficult to predict. Predators on mosquitoes, probably with a longer life cycle than the mosquitoes, might be eliminated, allowing mosquitoes to come back in even greater numbers when spraying stops. Fish breed in the swamps, and the spraying might kill off a generation of fry and seriously reduce stocks of food fish for the future. I believe that such dangers cannot be overemphasised - but it is difficult to persuade enthusiastic people who want to do something, preferably something dramatic but not too difficult, to stay their hands. Really useful long term measures are likely to be much less dramatic and involve much more hard work.

Schoolchildren should be shown live mosquito larvae in their hygiene classes, and these can readily be hatched in a covered glass jar to show that they really do turn into mosquitoes. They might be asked to report breeding sites around their villages to local authorities, either directly or through their teachers. Action at village level, such as the drainage or filling in of shallow ponds, and straightening and clearing of watercourses, should be encouraged. There are many seasonal ponds which are not of value for fish breeding and which can only really be got rid of by villagers themselves. Some could be filled in or drained once and for all. Along the lake shore the action of wind and waves tends, in some areas, to build up a ridge near the lake edge, behind which water collects in the rainy season. Mosquitoes breed in the ponds so formed. I can see no once-for-all remedy for this, but it is fairly simple to dig a channel through the ridge and drain the pond - a process which has to be repeated at least once a year, probably oftener, to be effective, but one which would not involve much work for each villager if the task were shared among all.



Unless hospitals can be rendered mosquito-proof, all beds should be equipped with mosquito nets to protect patients from bites. This has not been the policy in the past, partly on grounds of expense. Bought in quantity reasonably good nets should not cost more than £4 each for adult beds, and much less for infants cots. I was persuaded that all hospital beds should have nets by spending one night waiting in a car (for a lion) near some wards in which some patients did not have nets. In the morning I counted about 50 mosquito bites on myself. A Medical Assistant to whom I mentioned this said "Only 50 ? That's nothing".

#### OTHER INSECTS AND ARACHNIDS

Like everyone else, medical staff have to concern themselves with insects such as white ants, weevils and others, that cause damage to buildings or loss of food. Among insects of directly medical importance, probably the housefly and its close relatives rank next after the mosquitoes. Flies spread intestinal, eye, and perhaps other infections. Education and sanitary measures, as discussed on other pages, are the remedy.

A variety of biting flies of minor importance include *Haematopota*, *Tabanus*, *Chrysops* - which may sometimes transmit loa loa, and *Stomoxys*. I have met flies which were probably *Simulium* species, but know of no cases of oncocerciasis.

Tsetse flies exist in some areas, and their transmission of trypanosomiasis among cattle is of economic importance. Sleeping sickness used to occur, but it is many years since a case has been recorded. In enquiring locally after tsetse flies, one can be misled by errors in translation - Chinyanja uses the same word (*Chimpanga*) for both tsetse and *Tabanus* flies.

If underclothes are dried where the tumbu fly can lay its eggs on them, and not ironed, then the wearer may get larvae (*Chinyanja* = *putsi*) under his skin. The resulting painful red swellings may be taken for boils, or even erythema nodosum. Inexpert treatment of these can lead to nasty local infections. Precautions are to iron all clothes which have been



dried or aired out of doors.

Bedbugs can be a serious problem in hospitals and institutions. Beds should, if at all possible, be of metal, and when selecting hospital mattresses or furniture one should carefully consider whether they could provide cover for bugs. Cracks in walls, and spaces behind boarding fixed to walls, should be filled in. Where walls are whitewashed, the patients' habit of squashing bloated bedbugs as they climb the walls is messy - but effectively points out to staff the need for action. Villagers are said sometimes to introduce cockroaches to their houses to eat the bedbugs, and I can imagine that this might be effective. (Cockroaches spoil some food, and occasionally get lodged in the ears of sleepers).

In a few areas *Ornithodoros* ticks in the houses are vectors for relapsing fever. In the bush, hard ticks - normally parasitising animals, may occasionally attack man.

Fleas are fairly common, but mostly seems to be animal fleas which prefer their normal hosts (particularly the dog flea). Only in the event of plague are they likely to be of much importance. Jigger fleas do not seem to be found nowadays.

According to local Africans, the usual custom of keeping hair cut short is to avoid infestation with lice. The only lice which I saw in Malawi were pubic lice on one European patient.

Mites from poultry may cause skin conditions, particularly in children. Scabies is widespread, and can be a serious nuisance - causing skin infections, particularly in children.

A variety of hornets, wasps, and scorpions occasionally sting people, but rarely do serious harm - though a few people are hypersensitive. Rarely, people are killed by massive attacks by bees. There are also biting ants, poisonous centipedes, possibly poisonous spiders, and a large spider-like arachnid (local name "nkonjele") which squirts corrosive fluid onto those who displease it. I have never seen these do significant harm (though I have had to remove my trousers rapidly when ants got inside).



## MALARIA

One hopes that, at some time in the future, malaria will be eradicated. If an eradication campaign were to be carried out now, existing health services would be inadequate to consolidate it and to prevent the re-entry of the disease from neighbouring territories - and its spread from persistent cases.

At present the population is largely adapted to the disease, infection, and frequent reinfection, being almost universal. This adaptation is at the cost of considerable mortality and morbidity among children. Eradication, or substantial reduction, would speed the population increase - so that greater food production (and later more school places) would have to be planned for. (This is no argument against eradication, merely a fact that must be faced).

Most eradication campaigns are based on attacking anopheline mosquitoes, and their larvae, to prevent transmission of the disease. While the eradication of anopheline mosquitoes would appear an almost impossible task, contact between infective mosquitoes and human beings could be substantially reduced by residual spraying of houses with insecticide. The probable effectiveness of this could not be estimated without a detailed survey of which species of anopheline mosquitoes in Malawi are important vectors, and whether any important vectors normally feed on human beings out of doors. The former Federal Ministry of Health did try such a campaign around Lake Shirwa, but it came to an end when the villagers refused to co-operate. This refusal may have been political, but may also have been partly because the villagers got tired of having their houses sprayed.

There may be a point at which reduction of the transmission of malaria in a country such as Malawi does more harm than good, in that immunity is not gained and maintained by repeated infection, but infection is still liable to be met with sooner or later by most people - resulting in the spread of mortality and morbidity over a wider age range, with an increased liability



to severe attacks of malaria among adults and adolescents.

At present attacks of malaria among healthy African adults are rarely serious. Another illness, or a major surgical operation, may precipitate an attack of malaria. I found it wise always to give an antimalarial to anyone about to have a major surgical operation, for instance a caesarean section, as otherwise malarial attacks were frequent causes of post operative temperature rises.

There is, however, one group of Africans among whom severe, and often fatal, malaria is common at all ages - immigrants from malaria free countries to the South. There are frequent tragedies when Malawis who have worked for many years in South Africa or Rhodesia, and gained wives and children there, return to Malawi. They themselves get malaria, but still seem to have a large degree of immunity. The wives and children get severe and repeated attacks of malaria, and many die. While I know of no surveys or figures, I would guess that about half of such wives and children die within a year of their arrival in Malawi. Poorer diet and lower hygienic standards contribute to this, but malaria plays the major part. Their death rate is comparable to that of the early European missionaries, who lived under primitive conditions with no modern drugs.

These deaths are preventable and should be prevented. Such men are usually fairly prosperous, and should be able to afford the cost of prophylactic paludrine for their families. Steps should be taken to ensure that all such families are warned of the need for prophylaxis - which is just as great as that of the European immigrants to the country, who take prophylactics automatically. If possible, families should be warned before leaving South Africa (perhaps through ticket booking agents, by arrangement with the railway companies). Infected mosquitoes may invade the train as it passes through Portuguese East Africa on its way to Malawi. At the least, warning, preferably with an initial packet of paludrine tablets, should be given to all such persons when they go through immigration formalities



on entering the country.

All immigrants and visitors, apart from those from neighbouring endemic areas, should take prophylactic drugs. Paludrine (proguanil) remains the most generally satisfactory, one or two tablets daily for an adult, half for a child, quarter for an infant. All of the other prophylactics are liable to have unpleasant side effects, or can be dangerous if misused. One tablet daily should cost about £1 per year, perhaps 30/- if bought retail in small quantities. This does not eliminate the risk of infection, but should eliminate mortality and greatly reduce morbidity. Visitors should be advised to start the drug before arrival and continue for a month after departure.

Local people who are willing and financially able to commit themselves and, or, their families to a lifetime of regular prophylactic paludrine, might be encouraged to do so. If I were a Malawi schoolteacher or Medical Assistant, I would certainly want my children to take paludrine, and have mosquito nets over their beds, to save them from the normal suffering, and risk of death, which children go through before partial immunity is acquired.

In Nigeria Morley and others (1964) found that 50 mg of Daraprim (pyrimethamine) given once a month to pregnant women, in an African village where malaria was holo-endemic, caused the mothers to gain more weight in pregnancy, and their infants to have a higher birth weight, than in a control group.

In Malawi some mission hospitals have tried giving monthly pyrimethamine to infants attending baby clinics, to reduce the anemia which is attributed largely to malaria. The results of such trials might be considered by the Ministry of Health, which might also conduct its own, so that the Ministry could advise on whether the practice should be recommended. There is a possible danger of irregular or sub-optimal dosage leading to an increase in the proguanil and pyrimethamine resistant strains of malaria parasite.



Some local strains of malaria parasite would appear to be resistant, or partially resistant, to proguanil and pyrimethamine. It is sometimes said that strains resistant to one of these drugs are resistant to the other, but this has been denied (Wilson and Edeson, 1964). My impression that some strains, on Likoma Island in particular, are resistant to chloroquine and mepacrine, was reinforced by that of a colleague (Mumford, 1963). While chloroquine is generally advocated as the most suitable therapeutic drug, I have found that some infections (including one personal one) which do not respond to chloroquine have cleared rapidly with the administration of proguanil in therapeutic doses. Resistance to the modern drugs may throw one back on the use of quinine which, whatever its disadvantages, remains effective.

Colbourne (1962) suggested that typical eradication campaigns require about one doctor and six assistants for each 200,000 of the population, and cost three to four shillings per head of the population per year during the campaign. If Malawi has  $3\frac{1}{2}$  million people, and we calculate on 3/6d per head, a campaign in Malawi would cost £612,500 per year, over perhaps four years, and require about 18 doctors and 108 assistants. (Costs will have risen since 1962. The government had a total of 25 doctors for all its services in August 1964). 40% of the cost (for apparatus, chemicals, transport etc.) might be met by W.H.O. and U.N.I.C.E.F. - but such help is only available, generally, for eradication, as opposed to control, schemes.

While I would favour asking the World Health Organisation to help in making a survey of the extent of the problem, and recommendations as to the advisability, and probable cost, of an eradication campaign, I do not believe that such a campaign is practicable at present, or that it carries sufficiently high priority to give it precedence over other problems. When undertaken, a campaign should be in conjunction, if possible, with ones in neighbouring territories.



Of course if a new "ideal" antimalarial drug, easy to administer, cheap, long acting, and without side effects or the production of resistant strains, becomes available, then the picture would be completely altered. Bruce-Chwatt (1964), reviewing the need for new antimalarials, sees little hope of the imminent discovery of a "wonder drug", but mentions work in the U.S.A. on a new experimental compound known under the code name CI-501 which, when given in a single intramuscular injection, has continued to protect volunteers from induced malaria for several months.



## TUBERCULOSIS

This will probably be one of the biggest health problems of the country. The unofficial estimate that 1% of the population have active tuberculosis (see page 32) implies that there are 35,000 cases in the country. 2,173 cases were treated in 1962.

The rise of educational, hygienic and living standards should lead to a reduction in transmission of this disease, which must be encouraged by vigorous public health propaganda. Staff, such as Health Assistants, visiting villages must take a big part in this. (B.C.G. vaccination has been discussed on page 72, and the arrival of an American mobile X-ray unit has been mentioned on page 30).

The normal method of case-finding up to now has been by sputum examination. This is cheap, and very valuable, but is often too late for treatment to be rapidly effective. The ready availability of radiography for the contacts of sputum positive cases might enable many more cases to be found at an early stage. A start on Mass Miniature Radiography might be made in Blantyre-Limbe.

Patients are often unwilling to submit to lengthy in-patient treatment, particularly when they feel well. Too often, a patient who has responded well to treatment has discharged himself after only a month of therapy - only to come back again later, and sicker. Massive numbers of cases could obviously not be treated as in-patients if they can be detected. Thus, while beds must be available for seriously ill cases, only through out-patient treatment is a massive therapeutic campaign practicable.

Apart from the organisation of effective detective and therapeutic services, problems are set by the cost of effective therapy and the difficulty of persuading patients to accept it and persevere with it.

Fox (1964) presented a possible choice facing a clinician in a developing country, treating 2,000 cases of tuberculosis on a limited budget, as being between treating 100 patients with



standard chemotherapy, as in Britain, in the expectation of achieving quiescent disease in practically every one - but leaving 1900 patients untreated, or treating all 2,000 with isoniazid alone with the aim of achieving quiescence in perhaps 1400 (70%) of the patients, leaving 600 with probably isoniazid resistant infections.

While it is obviously preferable to cure 1,400, rather than 100, cases, will the 600 cases with isoniazid resistant infections ensure that the next generation of cases are infected with organisms which are isoniazid resistant from the start? Of course public health measures might greatly reduce the size of the next generation of cases, enabling more expensive treatment regimes to be used on smaller numbers of future cases.

If experience proves it effective, a combination of isoniazid with thiacetazone does not cost much more than isoniazid alone - and would probably be preferable. Fox (1964) suggests that if isoniazid is used alone a dose of 400 mg daily, for an adult, is ~~recommended~~ substantially better than the more usual 200 mg - but may need the addition of pyridoxine in small quantities to guard against the danger of peripheral neuritis. He gives an interesting table of approximate costs of one year's treatment with varying regimens. Costs of drugs for primary regimens vary from \$1.25 to \$44.50 per year (see next page). The expected expenditure of £900,000 on government health services in Malawi in 1964, if the population is 3½ million, is just under 5/2d per head (about \$ 0.72).



Approximate Cost of Drugs for One Year's Treatment with  
Various Primary and Reserve Regimens. (Fox, 1964).

<u>Regimen</u>	<u>Daily Dosage of Drugs</u>	<u>Approximate Cost in U.S. Dollars</u>
Primary:	Isoniazid 200 mg. plus P.A.S. sodium 10 g. (cachets)	20.50
	Isoniazid 200 mg. plus streptomycin 1 g.	44.50
	Isoniazid 200 mg. plus P.A.S. sodium 10 g. (cachets), with streptomycin 1 g. daily for 6 months	42.00
	Isoniazid 200 mg. (1 tablet)	1.25
	" 300 mg. (1 " )	1.85
	" 400 mg. (1 " )	2.35
	" 300 mg. plus thiacetazone 150 mg. (1 tablet)	2.55
Reserve:	Cycloserine 0.5 g. plus ethionamide 0.5 g.	170.25
	" 0.75g. " " 0.75 g.	255.50
	Streptomycin 1 g. plus pyrazinamide 2 g.	198.50
	" 1 g. " ethionamide 0.75 g.	145.25



Compulsory treatment is difficult to enforce, and causes distrust of medical services. It is better to try to create enthusiasm for a campaign and social pressure for patients to accept treatment - for their own good and for that of the community.

The possibility of persuading villages to build a "tuberculosis house", or houses, in the village, in which patients could live, and be fed and attended by their relatives - who would live and sleep in their own houses, could be considered. (This idea is based on the practice of "night segregation" for leprosy patients). Relatives would be examined, mantoux tested and, if appropriate, given B.C.G. vaccination - and should if possible have a periodic checkup. With little expense to the State, this would remove patients from their homes - which are often crowded with children, without taking them far from their friends and natural environment.

If an adequate distribution of medical units can be obtained most patients should be within reach of at least a dressing station, from which out patient treatment could be dispensed. It might be desirable to train "Tuberculosis Orderlies" to give tuberculosis treatment only, equip them with bicycles and send them on rounds, based on a medical unit, to visit and treat patients in their own villages. It would probably be easy to recruit trainees for this job from the growing number of reasonably well educated youths who are finding it difficult to obtain congenial employment - or indeed any employment other than returning to their homes and working the land, which many are unfortunately reluctant to do.

It may be that the Peace Corps team (see page 30) will be able to do an adequate tuberculosis survey in the country, and work out the most suitable methods of treatment. If not, the World Health Organisation might be persuaded to do a survey, (despite the unfortunate failure of their previous attempt - page 32), and give advice.

If possible, it would be helpful to have a regime in which



treatment does not have to be given more often than twice weekly. (A once weekly treatment is probably too much to hope for at present). The giving of weekly or monthly supplies of tablets to patients, to take in their own homes, is very unreliable - tablets are liable to be lost, forgotten, or given or sold to others. In Madras a regime of outpatient treatment with 1 G. streptomycin given intramuscularly, and 650 mg isoniazid orally (for a 100 lb patient - more or less according to weight, averaging 13.9 mg per kg body weight), given together twice weekly, has been found at least as effective as 200 mg of isoniazid and 10 G of P.A.S. ~~given~~ daily, given to patients in weekly supplies to take at their homes, (Madras, 1963).

If the Madras regime of twice weekly streptomycin and isoniazid proves effective in Malawi, as we may hope it would, it would combine relative cheapness with certainty as to what therapy patients were receiving, since it should be possible to have twice weekly therapy given on the spot by health staff either at medical units or in patients' villages. (Provided that the health staff are reliable).

In Malawi one sees many cases of children with large tuberculous lymph nodes, sometimes fistulous, of their necks (scrofula). These tend to be discouraging to treat, as they do not respond rapidly to present chemotherapy. By preventive measures we must try to prevent further generations of children being affected in this way.

For "World Health Day", April 7th 1964, W.H.O. used the slogan "No Truce for Tuberculosis". Literature issued stated: "Bodies like the World Health Organisation, U.N.I.C.E.F., and the International Union Against Tuberculosis are ready to face the challenge, but the main effort must come from within the countries themselves." "...being economical and easy to apply, B.C.G. vaccination could - if used systematically and continuously over the next few decades - bring about the elimination of tuberculosis as a public health problem in any developing country." (W.H.O., 1964).





Adora. August 1960. Likwenu Leprosarium.

This patient, with lepromatous leprosy, still had unsightly lumps on her face after some two years on dapsone therapy (top picture). The lower picture was taken about three weeks after a simple operation, under local anæsthetic, to remove the worst of the lumps. Her morale was greatly improved after the operation.



## LEPROSY

The LEPRA leprosy control project in Malawi is intended as a pilot project to demonstrate to the World that leprosy can be effectively controlled and progressively eradicated with existing resources (LEPRA,1964) (See also page 30).

The project provides for a small unit, with its central buildings located in the grounds of the general hospital at Blantyre, capable of clearing the disease from a selected area in 7 to 10 years. It will be headed by Dr Gordon Currie, the Malawi Government leprologist. "Mobile teams will carry out surveys to contact and extensively treat all 'open' infectious cases; to treat early cases before the development of deformities; and to maintain a close surveillance of the contacts, especially children. B.C.G. will be used as a protective vaccine for such child contacts, since results of trials have shown that it confers a high degree of protection. Continuous propaganda will be used to emphasise the effectiveness of early and sustained treatment and of regular checks, primarily of children and contacts." (LEPRA,1964 - press release).

It is to be hoped that this project will live up to expectations. The long incubation period, and prolonged course, of the disease, make the hope of clearing the disease from a selected area in 10 years seems rather optimistic - but it might be possible to have all active cases under treatment by the end of that time, which would be a considerable achievement.

Some 12,634 cases were recorded as receiving treatment in 1962. (Rhodesia and Nyasaland, 1963). The actual number of sufferers in the country might be guessed at 40,000 to 50,000. In general, infectious cases of leprosy do not seem to be shunned by the community, but "burn't out" crippled cases are sometimes cast out by their villages - partly, perhaps, from a misplaced fear of infection (since such cases, though obviously deformed, are unlikely still to be infectious), partly in some cases because they are an economic liability, being unable to work.



The reluctance, in some cases, of families to take back such patients into their homes, after they have been to a leprosarium for treatment, may be compared with that of some families in Scotland who refuse to take a difficult grandparent home from hospital.

Leprosy relief has a strong emotional appeal to the charitably inclined, and the help (such as the project outlined above) available from such bodies as LEPRA, the Brown Memorial Fund in Malawi, the Mission to Lepers and the Order of Saint Lazarus, make possible the provision of much better facilities for the relief of sufferers and the eradication of the disease than the priority of leprosy as a health problem in the country might otherwise warrant.

LEPRA might be persuaded to finance the training of suitable Malawi staff as leprosarium superintendents, and to consider the possibility of arranging the training in Britain of Africans as physiotherapists - to work with leprosy patients on their return to Malawi.

The eradication project is unlikely to remove the need for existing leprosaria for many years. Charities wishing to support these should have it impressed on them that, for instance, £1000 per year for five years, given towards recurrent expenditure, may be of much more use than a lump sum of £5,000 tied to the erection of an impressive building which, though a fine monument to the donors, will require increased recurrent expenditure to maintain it and make use of it. Charitable bodies keen on a specific project (as opposed to making a grant towards general expenditure) might consider, perhaps as a complement to the LEPRA project, the setting up and staffing of a specialised unit to do corrective surgery, supported by physiotherapy, on crippled patients. This could enable many individuals to return to useful self supporting life in the community.

As with tuberculosis, country wide eradication of the disease can only be based on out-patient treatment for the vast majority of patients. Travelling orderlies dispensing drugs to





Well at Biti Kalanje Leprosy Village. July 1963.

This unprotected well is smaller and shallower than the one pictured on page 50a. A leprosy patient is scooping up water with a tin on the end of a stick, and pouring it into a locally made earthenware pot. To get really clear (though not necessarily bacteriologically satisfactory) water, patients had to walk about a mile through marsh - ideal for the transmission of hookworm and bilharzia - to the Lake edge.

Since the picture was taken a protected hand pump has been provided at the village, with £50 given for the purpose by the British Leprosy Relief Association.



patients, in their villages, weekly, might be used. (The same orderlies might perhaps be trained and employed to do this for both tuberculosis and leprosy).

Dapsone, the standard anti-leprosy drug, is, fortunately, effective when given weekly. But it is still "far from being the ideal drug for leprosy treatment." (Currie, 1963). It has a number of unpleasant side effects, and tends to provoke reactions which may lead to permanent nerve damage. Currie (1963) found that "Etisul" (diethyl dithiol isophthalate) used in conjunction with dapsone greatly reduced reactions and made treatment much more acceptable to patients who suffered these.

Leprosaria can only take a small proportion of cases, and have to concentrate on infectious cases in the early stages of treatment, cases where reactions to treatment cause difficulties, cases requiring operations and, or, rehabilitation, and crippled cases, who frequently need attention for ulcers of the feet or hands. It can be difficult to refuse admission to cripples unable to look after themselves and without families able or willing to look after them. This last group might appropriately be cared for in leprosaria run by charitable bodies - but the danger should be recognised of encouraging families to abandon their responsibilities by taking in cases too readily. The last days of some such patients can be made much more comfortable by simple operations on the eyelids for entropion, and attention to their feet and hands.

There is a place for "leprosy villages" in which leprosy patients congregate, and receive treatment weekly from a visiting Medical Assistant. There is such a village at Biti Kalanje, associated with Malindi Mission Hospital, near Fort Johnston. The patients generally maintain a high morale among themselves, and maintain a much higher than average standard of cleanliness in their village. They grow most of their own food, but severely crippled patients need a subsidy towards the purchase of food. (Food in kind could be substituted, but needs more organisation for its distribution). They may also need help



with clothes and blankets, which can sometimes be got from charitable bodies or individuals.

A lesser, and perhaps generally preferable, form of segregation would be "night segregation". This has been ~~tried~~ tried successfully in an experiment in Madras state in India. In four villages there accommodation was built in which leprosy patients spent the nights, but during the days they worked in their fields as normal. The incidence of leprosy decreased in these villages, but increased in control villages where night segregation was not used. (Cochrane, 1964).



## PARASITIC WORMS

Hookworm infection is the most important of these illnesses caused by these. It is mentioned on many other pages of this thesis. Estimates of its incidence have varied from "almost universal" (page 14) to 7% (page 17). My impression is that the first of these estimates is nearer the truth, but there is scope for an interesting and useful investigation into the actual figure. Plainly a great many people have light infections without significant impairment of their health, but one frequently meets severely anemic, listless, children, with puffed up faces - and with very heavy infestations of hookworm. The same picture occurs in women, but rarely in adult men (see p. 71). Treatment of individual cases can be with tetrachlorethylene, but "Alcopar" (bephenium hydroxynaphthoate) appears, dose for dose, to be just about as effective as tetrachlorethylene, and very much safer and pleasanter for the patient. The Federal Ministry of Health refused to sanction the routine use of Alcopar on grounds of cost (2/- per dose), but its use does not require the starvation and purgation needed with tetrachlorethylene - and some patients who needed hospitalisation before can now be treated as out-patients with Alcopar. It might become possible to associate dosage of everyone in an area with Alcopar with a campaign of sanitation and education, in an attempt to eliminate hookworm.

Roundworms and strongyloid worms also occur occasionally and can also be treated with Alcopar. Tapeworms (presumably beef tapeworms) occur very occasionally, (or are diagnosed very occasionally). Not very much meat is eaten. Threadworms occur, but one is only rarely asked to treat a case. I have not heard of trichinosis, but it has occurred in East Africa, and might occur occasionally, from a reservoir in wild animals, without being diagnosed. Certainly I would not eat wild pig unless it were well cooked.



Urinary and rectal bilharziasis occur, the former being much more common. Sanitation and education are, again, the real answer. European missionaries have lived 25 or more years on the lake-shore without being infected. They bath normally in metal baths in their houses -water having been heated over a fire, and when they swim in the lake do so from open sandy beaches where there is less cover, than among rocks and reeds, for snails, and where people are less likely to go to pass urine and defecate. Campaigns against snails are a possible line of attack, but the lake is very large - and any measure which endangers fish stocks should be avoided. The use of copper sulphate around the shores of Likoma Island by Dr George MacLean was thought to reduce the incidence of the disease among children on the island. The extent to which this infection contributes to cirrhosis of the liver is debated. It is also thought that it may be among the causes of the nephrotic syndrome (Gelfand, 1963).

Filariasis occurs, and may be responsible for many cases of scrotal enlargement, but is not a serious public health problem. Presumably the infection is with *Wuchereria bancrofti*. It is possible that onchocerciasis and loa loa may occur.



## INTESTINAL INFECTIONS

Intestinal infections at all ages are part of the picture produced by poor sanitation and unsatisfactory water supplies. Breast feeding probably saves many infants from gastro-enteritis, but where breast milk fails the combination of inadequate substitutes ( thin gruel made from maize or cassava) with poor hygiene is often fatal.

Gastro-enteritis is frequent in children, but diagnosis is complicated by the fact that malarial infection may cause severe diarrhoea.

Bacillary dysentery appears (clinically) to be common. Amoebiasis is relatively rarely diagnosed.

In normal practice in the countryside one expects to diagnose, and treat, occasional cases as typhoid, without having laboratory confirmation of the diagnosis.

I have rarely attributed intestinal upsets in Africans to food-poisoning, perhaps because food in the villages is usually of a simple nature and eaten soon after it is prepared. Certainly food-poisoning occurs among Europeans.

Presumably there are a lot of virus infections, but there are no laboratory facilities for investigating them. (Poliomyelitis has been mentioned on page 73).



## TROPICAL ULCERS

Tropical ulcers on the legs, particularly the ankles, afflict many people - of all ages after young childhood. Some people carry on their normal lives with ulcers several inches in diameter on their legs. They are infrequently found among Europeans, but several of the older missionaries bear their scars. (I myself got a very small one and had to go to bed and have penicillin injections.)

Their etiology is not well understood, but insect bites and minor trauma - such as scratches from thorns - may help to start them, and poor nutritional states may encourage their development.

Sometimes they heal well, but sometimes treatment is very unrewarding. Many medicaments are tried on them. Eusol seems one of the best, at least for getting them clean and allowing healing to start. Probably healing could be helped in many cases if patients could be immobilised in bed, as with varicose ulcers in Britain.

As always, prevention is better than cure. The prompt treatment of minor injuries - painting with gentian violet is often effective - may prevent them from starting, and early treatment while the ulcers are still small gives the best chance of cure. The thin skin covering old ulcer scars is very easily damaged, allowing the ulcer to re-start. Occasionally one sees slow growing malignant tumours arising in the sites of these ulcers, even in children. Two such were reported as fibrosarcomata when I sent biopsies for a histological report. Amputation of the limb is generally refused by the patient, unless he or she has been in severe pain and unable to walk for some time. Even without malignancy, amputation is occasionally required as the only way to get rid of a really large chronic ulcer.

Rising standards of living will probably reduce the incidence of these ulcers.





Cancer of the breast. May 1960. Malindi Hospital.

This picture was taken after a few days of local dressings and systemic antibiotic therapy had made much cleaner the originally foul smelling and maggot infested ulcer.

The patient refused a palliative mastectomy, giving as a reason that loss of a breast would hinder her in feeding her infants in the future. She returned to her village.



## MALIGNANT DISEASE

There has been no proper survey of the incidence of malignant disease in the country, but my impression is that one sees as many cases of malignant tumour in Malawi as in Scotland, though a different distribution of kinds of tumour.

Malignant lymphoma in children (Burkitt tumour) is perhaps the one I have seen most often. There are very few post-mortems, so that diagnosis is generally either clinical or by biopsy - often done at operation. I have also seen fibrosarcomata, osteosarcomata, ovarian tumours, malignant melanomata, cancers of the breast in women, and one rodent ulcer. Amputation of a member is frequently refused until it is too late for cure. One patient with an enormous ulcerated breast cancer, which must have been very painful, and stank abominably - and contained maggots - when she was admitted, refused a palliative mastectomy on the grounds that this would make it difficult for her to feed her children. An older patient had had a breast cancer, and ultimately the breast had fallen off. She was only moderately inconvenienced by the ulcer which remained.





Albino and normal African babies with their mothers.

The picture was taken in March 1959 at a clinic at Msumba Mission Hospital, Mozambique (No. 3 on the map on page III).



Small boys at Mpondas, one an Albino. 26th June 1962.

The albino child is blind in one eye, with corneal opacity, and has dark, possibly pre-malignant, patches on his arms, face and chest.



## ALBINISM

While this is not a major public health problem, it causes great suffering to the ~~smk~~ individuals who suffer from it. One sees albino infants and children fairly often, adults more rarely. There appears to be no social barrier, or discrimination, against albinos. The infants appear healthy, and loved by their mothers. But the unprotected skin and eyes suffer from the bright sunlight. Skin diseases are frequent, and include raised melanotic patches - the only black bits of their skin - which may develop into epitheliomata. Probably the majority do not reach adult life.

Protection from these ill effects can be given, with care, by broad brimmed hats and adequate clothing, but sufficient care is not generally taken. One imagines that if all were enabled to survive their children would swell the numbers of those affected (or, at least, their descendants - as the character appears to be recessive).

Occasionally one sees an individual with a reddish-brown skin and hair, which is suggestive of partial albinism. This does not seem to involve any disability for the individual. I do not know whether or how this is genetically related to albinism.



## VENEREAL DISEASES

Estimates of the incidence of syphilis and gonorrhoea vary widely. Syphilis is probably blamed for a lot of conditions for want of a better diagnosis. Full courses of penicillin may have to be given when the disease is only suspected. If reliable serology could be made widely available this could be avoided and valuable figures for the incidence of syphilis could be obtained.

I have not known any case to be diagnosed as neurosyphilis, which seems strange if syphilis is as widely spread in the community as is often suggested. It may be that such cases occur but are not diagnosed - are not seen by medical staff even. Possibly malarial infection, which used to be used in the fever therapy of neurosyphilis in Europe, protects those infected from this end result of the disease. Perhaps the local population is relatively resistant to the organism, or the local strain of the organism is relatively avirulent.

Ignorance about how venereal disease are spread must be attacked by education, and propaganda about the need for prompt and adequate treatment is needed. There is a danger of patients seeking clandestine treatment from medical staff, in return for bribes, out of shame, and such treatment will often be inadequate.

In Blantyre-Limbe, and later perhaps in other centres, it might be valuable to set up a venereal disease clinic. Results and research there might help medical staff in other parts of the country to decide how to deal with the problem in their localities.

I saw one case, in a girl of 7 to 9 years of age, which appeared clinically to be, and responded to the treatment for, ulcerating granuloma of the pudenda. But as the treatment included streptomycin the possibility that it was a tuberculous infection cannot be excluded.



## EYE DISEASES

Conjunctivitis is frequent, especially among children. Involvement of the cornea can lead to scarring and loss of vision - this sometimes follows the abuse of traditional medicines for conjunctivitis. I have had many patients who had traditional treatment for conjunctivitis and arrived with terrific inflammation of the conjunctivae. Sometimes vision has been lost or impaired by corneal scarring, but often the use of eye ointments containing, for instance, hydrocortisone and chloramphenicol, can lead to cure.

Entropion, following trachoma and leprosy, causes great distress to individuals and can often be relieved by a simple operation under local anaesthetic. Ectropion also occurs.

Cataract is frequent and ordinary Medical Officers willing to undertake cataract operations can learn to do these fairly easily and get reasonable results. I have not known of government M.O.s doing this, but some Mission M.O.s do. Mkhoma mission hospital has done ~~xxx~~ large numbers of such operations in recent years. Many patients who would come to a local M.O. for operation, particularly if he has been resident in a district for some time, and has a good reputation, are not ready to travel to Blantyre to the country's one eye specialist.

With the lack of oculists and opticians (one Rhodesian firm has a branch in Blantyre) prescription of spectacles has often to be on the basis of trying out +1, +2 etc pairs of spectacles and seeing which give the best results. The obtaining of cheap standard spectacles in bulk enables the cost of these to be kept down to, on average, under £1 per pair. This must in most cases be met by the patient. Schoolchildren genuinely needing more expensive, individually made, spectacles might well have these subsidised to bring the cost down to £1 per pair, or even to make them free - at least for those without prosperous parents.

It is necessary to fight the idea that spectacles are a necessary status-symbol for all well-educated young men.





Malawi Womens' League. Nkhota-kota. 28th September 1960.

These gaily dressed delegates from a branch of the Malawi Womens' League are at the first annual congress of the Malawi Congress Party. The Party, with its Womens' League, Youth League, and Young Pioneers ( the corps d'élite of the Youth League ), forms the government of the country and has the support of most of the population. In SECTION THREE, which follows, I have suggested that these bodies be invited to nominate members to various health advisory committees, since they represent the views of much of the population and in order to obtain and facilitate their co-operation in campaigns of health education and preventive medicine.



### **SECTION THREE**

#### **A SUGGESTED OUTLINE FOR FUTURE HEALTH SERVICES**



# SECTION THREE : A SUGGESTED OUTLINE FOR FUTURE HEALTH SERVICES.

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## A SUGGESTED OUTLINE FOR FUTURE HEALTH SERVICES

These suggestions would be a development of, and based on, the present structure. For the "establishment" of senior staff under the present structure see Appendix III, and for numbers of junior staff in 1962 see pages 22 and 24. Suggestions on a number of matters of detail have been made in Section Two, pages 36 to 101. I hope that these suggestions are realistic. A great expansion in medical staff is desirable, but numbers employed are bound to depend on the money available, together with the success of recruitment and training schemes. It is difficult to predict how much money will be available to expand and improve staff, buildings and equipment, but I have mentioned on pages 26 and 27 the increase in government expenditure on health in Ghana from £965,020 in 1950 to about £8 million in ~~1961~~ 1961-2, and eightfold increase inside twelve years (though rather less if one allows for the fall in the value of the £1 over that period). An account of health services and plans in Ghana, Nigeria and Tanganyika, is given in Appendix I.

### Administration.

The administrative structure of the Ministry of Health might be basically as follows:

Minister of Health : appointed by the Prime Minister, a member of the Cabinet.

Secretary for Health : permanent head of the Health Service, responsible to the Minister of Health.

Chief Medical Officer : deputy to the Secretary for Health.

Chief Health Inspector : head of the Health Inspector staff, concerned primarily with such matters as housing, town planning, sanitation, water supplies and drainage, and the activities of Public Health Inspectors and Health Assistants, in co-operation with the Chief Medical Officer.



**Principal Matron :** the chief nurse of the health service, especially concerned with the recruitment and training, and allocation to posts, of nurses, midwives and medical auxiliaries.

**Chief Personnel Officer :** concerned with the placement, pay, leaves and records of all staff, in co-operation with the respective heads of departments, but primarily concerned with the recruitment of non medical staff, such as secretaries and drivers. (Individual units would themselves recruit such staff as cooks and sweepers, but the Chief Personnel Officer would recommend establishments of, and conditions of service for such staff, in line with Ministry policy, and deal with enquiries about such posts, or complaints about terms of service or treatment, reaching headquarters, in the first instance).

**Chief Pharmacist :** controlling the central purchase of drugs, equipment and supplies for the health services, and their distribution, and with the encouragement of the production of such supplies within the country. Also responsible for the recruitment and control, and training, of pharmaceutical staff

**Regional staff :** In each of the three Regions would be a Regional Medical Officer and a Regional Health Inspector, based at the principal town in the area and supervising clinical and public health work in it. To enable them to take part in clinical and practical, as well as administrative work, each should have competent secretarial staff able to deal with routine correspondence and paperwork without constant supervision.

**District staff :** At each medical unit the senior member of staff would be in administrative charge of the unit. The District Medical Officer, in charge of the District Hospital, would exercise supervision over lesser hospitals, rural health centres,



dispensaries and dressing stations in his District. Again, he should have competent secretarial assistance to lighten his administrative load. Where a doctor is not available, a Principal Medical Assistant could fill this post. District Medical Officers would co-operate closely with the local District Councils, and would fill the position of Medical Officer of Health to the District until such time as the District is able to afford a M.O.H..

I would recommend that there should be one Health Service, comprehending all clinical and public health work, and integrating so far as possible the medical and health work done by the central government, local authorities, voluntary agencies (mainly mission medical units) and others.

The central government would finance specialist services, and would pay the medical and auxiliary staff at all government units, but the local authorities (District Councils) might be made responsible for reimbursing to the Ministry of Health the cost, or an agreed proportion of the cost, of general medical services provided for the population of their Districts - which would give them a direct interest in the cost of local health services.

The townships of Blantyre-Limbe, Zomba and Lilongwe should be encouraged to employ Medical Officers of Health, Public Health Inspectors and Health Visitors, when these can be recruited and provided that the cost can be met from local rates. Such staff would be seconded from the Ministry of Health on the same terms of service as other Ministry staff of similar grade. The municipality would reimburse their cost to the Ministry. Other local authorities would be encouraged to obtain such staff when future developments make this possible. These staff would be concerned with all measures to improve hygiene and health in their districts, and might run maternity clinics, infant and child health clinics, and school health services. Cases with major conditions would be passed to the general medical services for treatment. These clinics would combat anaemia, parasitic and



other preventable infections, and subnutrition, among mothers and children, ensure that appropriate mothers are admitted to hospital for delivery, and by post natal examinations ensure that mothers are not left with gross perineal tears or vesico-vaginal or recto-vaginal fistulae.

Where there is both a District Medical Officer and a Medical Officer of Health these would be able to co-operate closely and, for example, cover for each other when one is off duty or not available. The M.O.H. might take responsibility for supervision of tuberculosis and leprosy out patient treatment.

### Advisory Committees.

To assist in the co-ordination of health services, and enable ideas and grievances to be aired, I would recommend the setting up of a Health Services Advisory Committee, which might meet quarterly, or oftener if circumstances warranted, at Ministry of Health Headquarters. Either the Secretary for Health or the Chief M.O. would attend, as would other senior officials if the agenda contained items relating to their departments.

I propose this on the basis of experience with the Advisory Committee on Medical Missionary Work, which existed under the Federal Government, and which let representatives of the mission medical services meet the Director of Medical Services, and try to thrash out problems with him, about twice a year. It would replace, and extend the functions and usefulness of, that former committee.

Voluntary agencies doing medical work would be represented, perhaps by three representatives each from the Christian Council, (representing non Roman Catholic Churches), and the Roman Catholic hospitals. Medical and, or, auxiliary staff associations should be represented. The Malawi Congress Party, League of Malawi Women, and League of Malawi Youth might each be represented, both to represent the views of the people for whom health services are provided and because these bodies may be concerned



in getting public health measures put into practice. The Secretary for Health would be able to invite any other body doing effective health work to be represented.

Where matters concerning both health and education, for instance, or agriculture, were to be discussed, the appropriate ministry might send an official to represent it.

While the committee would have no executive power, it would be able to offer advice to the Secretary for Health, and enable him to explain his policies to those affected by them. I believe this would have great value.

If the full committee were thought too unwieldy for quarterly meetings, it might meet once or twice a year, and appoint a smaller standing committee to meet more frequently. It could also appoint sub-committees to consider and report on specific problems.

#### Local Committees.

In the area of each District Council or Municipal Authority there should be a District or Municipal Health Services Committee. The chairman might be selected by, but not necessarily a member of, the District Council. If there were thought to be a danger of unsuitable chairmen being selected, the Councils might have the power to nominate chairmen, subject to confirmation of appointments by the Minister of Health.

Members would represent the Council, the government medical service in the District, any Church or other non-government medical services existing locally, local branches of the Malawi Congress Party, Womens' League and Youth League, and any other significant local bodies or institutions interested in health matters. The committee could co-opt persons thought likely to be useful.

This committee would consider the health needs of the District, advise the Council as to sanitary measures required locally, and co-ordinate the raising of self-help for, for instance, the building of dispensaries.



The Council itself would have to decide on the amount of money which could and should be raised, for health services, from local rates. The Committee would advise it on needs and priorities, and possible ways of saving money.

### Institutional Boards of Management.

Large hospitals, and institutions such as leprosaria, would normally be under the administrative charge of a superintendent or of the senior Medical Officer. I would recommend that all such institutions should have a Board of Management to advise the person in charge on policy, and help him to put it into effect. The Board should normally contain the M.O. or Superintendent and another member of staff, with a representative of the District Council and, where the unit is provided by a voluntary agency, representatives of the agency. It might also contain the local Court President, or his representative, and should have the power to co-opt. Where a unit serves the areas of two District Councils both should be represented. For District Hospitals the District Health Services Committee might also act as Hospital Board of Management.

(I had experience of setting up two such boards, one for a mission hospital - Malindi - and one for a leprosarium - Likwemu. I found them invaluable for keeping me in touch with the desires of the people whom the units were serving, and felt that they helped people to regard the units as "ours" rather than "theirs". By having local people and authorities represented on the boards, sources of friction between these and the units were removed. At Malindi hospital, for instance, there had been difficulties over village goats being brought to graze in the hospital and spoiling patients' food. When the Board was set up, with the village Chief on it, that was very quickly sorted out. At the leprosarium there were problems with villagers' houses and farms encroaching on leprosarium land. District Council representation on the Board helped this to be sorted out without the danger of a clash between the foreign Medical Officer - myself - and



leprosarium Superintendent, and the local District Council and villagers. Where unpopular decisions were inevitable I was able to demonstrate this to the Boards, which had to agree with them, and escaped myself the odium of having made these decisions personally. On the other hand there were occasions when other members of the Boards were able to suggest courses of action which had not occurred to me).

Matters requiring regulation, (some of which have already been discussed in Section Two), on which the Health Services Advisory Committee, with sub-committees where appropriate, might be able to offer valuable advice to the Government, through the Secretary for Health, include :

Registration and qualifications of medical and allied staff.

Training and recruitment of staff.

Unification of Health Services.

Fees for medical treatment.

Private practice.

Possession of drugs by the public, and sale of medicines and medical correspondence courses to the public (pages 62 and 63).

Health aspects of Town Planning (page 52).

Sanitation (p.47), and refuse disposal (p.50).

Water supplies (p.51).

Food hygiene (p.54).

Industrial health (p.58).



## REGISTRATION OF QUALIFICATIONS

Confusion has often been caused by varying names for the same grade of staff, and the same names for different grades of staff, both inside Malawi and between Malawi and other countries. Thus a person trained as a "Female Nursing Orderly" in Southern Rhodesia might claim, seeking work in Malawi, to be a qualified nurse. This claim would be quite honest, as she would have gained a qualification, and thereafter been addressed as "nurse", in Rhodesia. But in fact her qualification would be roughly equivalent to the local Senior Medical Assistant. The Missions built up the original medical services of the country and, with some variations, had, in ascending order of competence, Orderlies, Medical Aides, Medical Assistants, Senior Medical Assistants and Hospital Assistants. The government service took over these grades but, particularly under the Federal government, tended to change their meaning - the Missions generally then having to try to bring the nomenclature of their grades of staff into line with the new meanings adopted by the government.

There already exists a register of Medical Practitioners, Dental Practitioners and Chemists and Druggists. There is also a Midwives Board which controls and registers the qualifications of those, other than Medical Practitioners, entitled to practice midwifery.

A medical sub-Register of Hospital Assistants was abolished in 1946 (see p.16).

I would now advocate the registration of the qualifications of all medical, allied and auxiliary staff, and of self-employed or non employed persons who wish to retain their right to use these qualifications. The Secretary for Health would decide, or delegate the responsibility for decision, on what level, if any, staff who have obtained training or qualifications outside Malawi should be registered. This should be done in a reasonable way to ensure both that persons have qualifications adequate for the posts for which they are ~~employed~~



employed and that valuable qualifications are not lost to the health services through rigid application of "red tape" regulations. A list of recognised qualifications from other countries should be drawn up, with Malawi equivalents, and any persons claiming registration on the basis of qualifications not on the list judged on their individual merits.

Qualifications might be registered under heads such as the following :

Medical practitioners.

Assistant Medical Officers (see following pages).

Dentists.

Pharmacists (Chemists and Druggists).

Public Health Inspectors (Sanitary Inspectors).

Nurses (State Registered, Registered General, and equivalent).

Principal Medical Assistants.

Senior Medical Assistants.

Junior Medical Assistants (Medical Aides).

Health Officers (see following pages).

Health Assistants.

Midwives (State Certified, or equivalent).

Midwives class II (two years training after satisfactory completion of primary education).

Midwives class III (generally older women, with no level of schooling laid down, given two years training).

Physiotherapists.

Radiographers.

Almoners, and other qualified Social Workers.

Laboratory Assistants.

Dental Assistants.

Physiotherapy Assistants.

X-ray Assistants.

Medical Orderlies (subordinate staff trained to do some practical nursing, dressings and the like, but not to the level of Junior Medical Assistants).



## TRAINING AND RECRUITMENT OF STAFF

Existing arrangements for the training of auxiliaries should be continued and expanded. There is a special need for more midwives, and the training of more older women as Class III midwives might well be expanded. There has been a tendency to cut down on such training, and concentrate on the better educated Class II midwives. While better educated and qualified midwives are needed, the older Class III midwives have in practice been found to do very useful work, to be more acceptable to many village women than the younger better educated girls, and to continue in the work much longer than the young girls who, naturally, tend to get married and stop work - though they may of course return later. The widespread availability of Class III midwives, if it could be achieved, might accustom women to the idea that there should always be a midwife at a delivery, and in the course of time the younger midwives would probably become more acceptable.

All auxiliary training schemes, whether conducted by government or missions, should lead to examination for a government certificate.

Staff who have had auxiliary training in the past, but have not done medical work for some years, and now wish to return to work, might be offered an intensive refresher course for six months, and graded at the end of it according to the abilities they show. Such a scheme would ~~also~~ cover those who have returned to Malawi after working as Medical Orderlies (which title covers a wide range of abilities) in South Africa and elsewhere, and those who took abolition of office, and left the Federal Medical Service, in 1959.

There were in the past local Hospital Assistants on a medical sub-register, who in effect performed the work of Medical Officers, as did Indian Sub-Assistant Surgeons. In view of the probable difficulty in obtaining enough medical practitioners for the health services in the immediate future, and of the ability shown by these Hospital Assistants, I would recommend that



experienced and competent Principal Medical Assistants be upgraded to a new grade of Assistant Medical Officer, or perhaps the title of Hospital Officer might be preferred, if possible after an intensive training scheme - perhaps six months working with Medical and Surgical Specialists in Blantyre Hospital, with appropriate lectures. They would then be regarded as being fully qualified to be employed as Medical Officers in the Malawi Health Service - and entitled to promotion in the service on a basis of merit in the same way as other medical practitioners.

In a sense, this would be a recognition of what already happens, in that some Principal Medical Assistants already do the work of Medical Officers.

In the same way, some outstanding Health Assistants might be upgraded to be Health Officers, after suitable further training if possible, qualified to do the work of Public Health Inspectors.

It might be possible to send some such staff for courses in more developed countries, to broaden their outlook and experience, before upgrading (or immediately after).

Malawi will naturally aim to have her own University and Medical School, and training hospitals for registered nurses. (Plans for a Nurses Training School at Blantyre, to train to S.R.N. level, have been mentioned in "The Times", of Blantyre, 2nd June 1964). In the mean time, people must be sent abroad for such training, to a variety of countries. The recent immense increase in secondary school education is making it possible to obtain suitable qualified persons to go abroad for training. Numbers have already gone (see page 29) for medical and nursing training, which should have a high priority, but other grades will be wanted in the not too distant future. As training for these grades takes several years students should, if possible, be sent abroad for training now.



As numbers to aim at for training abroad in the near future  
I would suggest :

Doctors (medical practitioners)	25 a year.
Nurses (general + midwifery training)	30 a year.
Health Visitors	If possible some nurses after qualification, and perhaps two years work in Malawi, should go on to train in these fields.
Sister Tutors	
Midwifery Tutors	
Male Nurses	Perhaps 6 a year - some might go on to train as Tutors (equivalent to Sister Tutors). Others might train under LEPROA auspices as leprosy workers, and others might gain mental or other specialised nursing experience before returning to Malawi.
Dentists	Perhaps eight might be sent for training in each of these fields, initially, then four a year, increasing as the financial state of the country improves.
Pharmacists	
Physiotherapists	
Radiographers	
Almoners	" " " "
Psychiatric Social Workers	Perhaps 4 initially.
Public Health Inspectors (Sanitary Inspectors)	12, or as many as can be found, initially, then 6 yearly, if candidates and places can be found.

While Health Visitors, Sister Tutors and Midwifery Tutors are badly needed, it is useless to recommend numbers to be trained until there are some nurses trained to send for further training. If the present Central, General, District and Rural Hospitals each had one Health Visitor attached this would require 34 Health Visitors for a start.

Apprentice Sanitary Inspectors in Glasgow are paid while in training, and training takes four years. If British or other Local Authorities could be persuaded to take on apprentices from Malawi for training this training might be more valuable than male nurse training for men who want to do health work but are not qualified, or cannot get places, to train as doctors.



From a financial viewpoint, it is much easier for Malawi to send students abroad for forms of training in which the student or trainee is paid, and therefore self-supporting, while in training. In Britain this applies particularly to nursing. This point loses importance where foreign countries or agencies offer scholarships, but there are not enough of these to train all those for whom training is needed.

Recruitment of foreign staff will remain necessary until Malawi can produce her own, particularly until her students start returning, qualified, from ~~various~~ abroad, in significant numbers. Aid schemes such as the secondment of doctors from Israel, and the supply of United States Peace Corps staff, help greatly. Formerly recruitment was almost entirely from Britain, but now it can be from anywhere in the World.



THE UNIFICATION OF HEALTH SERVICES.  
THE POSITION OF MEDICAL MISSIONS.

The role of medical missions in the evolution of the health services in the past has been described in Section One. Though the description "Mission Hospital" is still popularly used, most of the Missions have now given way to local Churches. The Christian communities wish to be regarded as Churches belonging to the country - as indeed they now are in most cases - not as members and adherents of foreign Missions. The description "Church Hospital" and "Church Medical Services" may therefore be preferred, in the campaign to eliminate the idea of control from abroad. The local Churches will of course continue to make use of such staff as teachers, doctors and ministers, recruited from foreign Churches, and to accept financial and other aid from these churches.

The Churches will probably agree that ultimately the Government should run all major health services. I imagine that there will always be a place for Church social work in the community, and as a specific social service the care of those crippled by leprosy, who will be with us for a long time yet, suggests itself. But the Churches are still providing a valuable part of the health services, and for the immediately foreseeable future should be encouraged to maintain and expand their contribution. They can often recruit doctors and nurses, and draw financial and other aid from charitable bodies and individuals, which would not be available to the government. Their present work is, however, only possible because of government subsidies (grants-in-aid), and these should be continued. (Costs could be charged, in whole or in part, to District Council contributions towards the cost of general medical services).

A major cause of difficulty to Church hospitals has been their inability, through lack of finance, to pay staff, either local or expatriate, at similar rates to government staff with the same qualifications. The continual demand from local



communities for more and better Church hospitals and dispensaries has been difficult to resist and has tended to lead to an overstretching of their resources by the Churches. Any suggestion that a Church is trying to do more than its resources permit it to do efficiently, and should therefore close, or reduce the scope of, some of its units, to enable the remainder to have enough money devoted to them, produces (naturally enough) an outcry from those who would be deprived of the only medical facilities within reasonable reach of them.

In the educational field a unified teaching service was set up in which government and church educational staff are paid by the government on the same wage scale. Church hospital staff cannot be expected to remain contented when receiving substantially smaller wages than both government ~~and~~ hospital staff and church educational staff. The unified teaching service has covered African teaching staff, but not expatriate mission teachers - who have drawn grants-in-aid considerably below the level of government service wages for comparable staff.

I would advocate a unified health service in which, provided Church units fit in with national planning, all African staff of Church medical units should be included - with the same terms of service as those of the same grades of staff in government service. Where a Church agrees to integrate its services completely with the government service, and undertakes to provide expatriate (or local) medical officers and nursing staff - whose provision will relieve the government of having to find such staff, these staff should also be paid at government rates (including increments for experience, and other allowances or benefits made to government staff).

Where a Church wishes its services to retain a greater degree of independence, or where a Church Medical Officer, or nurse, though valuable, would not be considered necessary in a particular post if the government were providing the service, subsidy could be at a lower rate but not less, for full time staff, than £1,000 per year for a Medical Officer and £400



per year for a registered nurse with midwifery qualifications. Increments on these rates, for experience and higher qualifications, would encourage Churches to obtain well qualified staff, and encourage Church staff to seek higher qualifications. In some circumstances proportional grants might be given for part time staff - for married woman doctors and nurses, for instance.

There should be no difficulty in fitting all the present Church medical units into a national plan for medical services, if full co-operation of the Churches with the government is obtained. But should any Church wish to keep some unit or units entirely under its own control and outside the national service, or to create new units outside the national service, there is no reason why it should not be permitted to do so - entirely at its own expense - on condition that the services it provides are properly run, and open to government inspection, and that it makes regular reports of its work to the Ministry of Health - to enable complete national health statistics to be compiled.

In the field of social health, it may be that the Churches will set up hostels or institutions for ~~the~~ such groups as the physically or mentally disabled, young people working or studying away from home, young people without proper homes of their own, indigent old people without friends or relatives willing or able to look after them, and delinquents. If the government or local authorities thought these services of value grants might be given either towards general expenditure or towards the upkeep of specific individuals for whom the government or a local authority considers itself responsible. (There are few examples of this sort of thing as yet, but for some years the Fort Johnston Council of Chiefs, now succeeded by the Fort Johnston District Council, has given a small annual grant towards the upkeep of crippled leprosy sufferers at Biti Kalanje Leprosy Village - mentioned on page 92).



## FEEES FOR TREATMENT

A Health Revenue Committee was appointed to consider this subject in June 1964 (see also pages 25 and 28). The introduction of a 3d charge, per attendance, for African out-patients, from 6th July 1964, was one of the reasons given for the split between Dr Banda and some of his ministers in September 1964. Previously most medical attention for African patients at government hospitals had been free, though Mission hospitals made a small charge. Those who patronise African traditional medicine men have to pay substantial charges, and these are sometimes thought to have a therapeutic effect. Though charges are often complained of, at Mission hospitals for instance, the opinion is sometimes heard that medicine for which you do not have to pay cannot be worth much.

While from a political point of view it is perhaps not a very good country to make comparisons with, in Southern Rhodesia, from October 1964, Africans are to contribute to hospital expenses. As in Malawi, services there were free under the Federal Government (except in the sense that "free" services have to be paid for in taxation). "Nominal charges" of 2/6d for men and 1/- for women and children are to be charged, in Southern Rhodesia, per Out-patient visit, and charges of £2 for men, £1 for women, and 10/- for children, are to be levied on admission to Bulawayo and Salisbury African Hospitals, and of 10/- for adults and 5/- for children on admission to general and district hospitals. The "Central African Examiner" (August 1964) reporting these charges added "These charges are hardly likely to be considered 'nominal' by a family man earning £10 per month or less". African earnings tend to be considerably lower in Malawi than in Rhodesia.

Ultimately a "free" or almost free health service, financed from taxation and/or health insurance, should be the aim in Malawi. But in the immediate future this is unlikely to be



financially possible, and reasonable fees should be charged for treatment. Free treatment should, if possible, be given to pre-school children and expectant and nursing mothers, though a charge might continue to be made for delivery. Those who genuinely cannot afford to pay should, however, always be able to receive treatment free.

Children in schools might be covered in large centres by a School Health Service, and elsewhere by the general medical services, and pay insurance for treatment through a small supplement (perhaps 4%) on their school fees. When schooling becomes free so should School Health Service attention.

Certain groups of government employees, and their immediate families, would be entitled to free treatment either as part of their terms of service or from health insurance contributions deducted from their wages. These would include expatriate medical, educational and other employees, the police and armed forces, and health service employees. Free treatment might also be extended to expatriates belonging to organisations which are recognised as giving valuable help to the country, such as U.S. Peace Corps, British Voluntary Service Overseas, and Church Medical and Educational staff.

Fees charged and facilities offered used to depend largely on the race of the patient. This would no longer be acceptable, but it is necessary that patients who are used to a high standard of living should be able to be hospitalised under conditions comparable to those in their own homes - and that they should pay an economic cost for such amenities, which are far beyond what can be afforded by most of the population. Thus it is reasonable to continue, though not on a racial basis, the former "European" and "Asian" facilities for those who want and can afford a higher standard of amenity. It is likely that increasing numbers of African patients will want to make use of the higher amenity facilities, and that some Europeans, Asians and Coloured people will make use of the standard facilities for reasons of economy.



Hospital superintendents should have discretion to make amenity facilities available without charge, or at reduced cost, to those entitled to free treatment, or without adequate means, whose background is such that accommodation in ordinary beds, with ordinary African food, might be unduly distressing to them or delay their recovery.

Treatment for tuberculosis and leprosy, vaccination against smallpox, and immunisation against tuberculosis and whooping cough should be free of charge, (but a charge could be made for the issue of international certificates of vaccination).



## PRIVATE PRACTICE

While the point is arguable, I would recommend that full time government employees should not be entitled to carry on private practice. Private practice can compete with what should be a really full time job for a practitioner's time, and I believe that many practitioners welcome it when such practice is not permitted and there is therefore no pressure to perform it. The allowance "in lieu of private practice" added to a Medical Officer's basic salary should be absorbed into the salary and the separate allowance abolished. Where Church staff are being paid by the government at government rates, they should be subject to the same restriction, but where they are only receiving grants-in-aid they should be entitled to do private practice.

Private practitioners exist in the larger towns. They might be permitted access to government hospitals to treat their patients, the patientsx paying normal fees for accommodation to the hospitals.

Any private nursing homes or hospitals should be registered with and open to inspection by the Ministry of Health.

Private practitioners might in certain cases be employed part time, on a sessional basis, by the Ministry of Health.

Qualified midwives not employed by the government should be entitled to carry on private practice, subject to their work being open to inspection by the Ministry of Health and to their giving the Ministry reports of their work (numbers of cases attended each month or quarter, numbers of births and stillbirths).

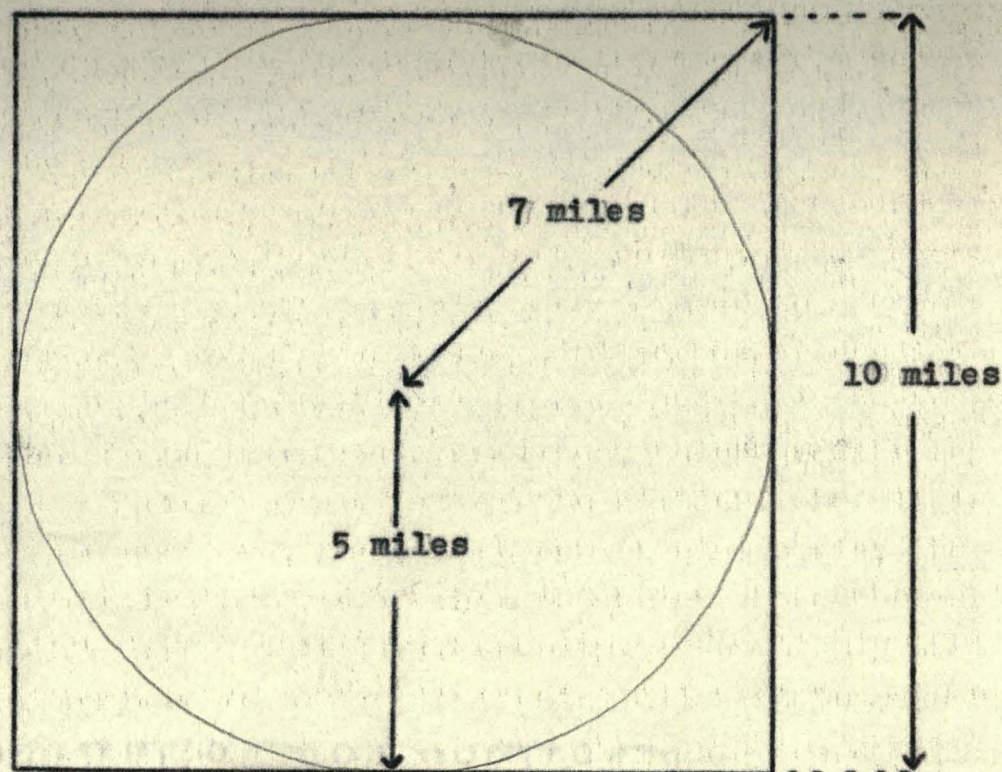


## THE DEVELOPMENT OF HEALTH SERVICES

The first priority is proper maintenance of the present services. Expansion will depend on opportunities and resources, but from the example of Ghana we may expect very considerable expansion, perhaps not immediately - but within the next ten years.

There are now about 200 medical units in the country, or one to, on average, 17,500 people and 185 square miles. Not all of these are general units, and they are not evenly distributed. (I assume a population of  $3\frac{1}{2}$  million and a land area of 37,000 square miles).

As an approximate aim for the next five or ten years, I would suggest one unit per 10,000 people and per 100 square miles. With proper distribution of units on this basis it should be possible to have most of the population within five to seven miles of a medical unit.



A square with 10 mile sides covers an area of 100 square miles.



370 such squares would cover 37,000 square miles. Most of such a square is within 5 miles of the centre, all of it within 7 miles. This would require 370 units.

Of course Malawi is not rectangular, nor is the population evenly spread, but some areas are not populated so would not have to be within reach of a unit. Allowing for unpopulated areas, and not counting specialised units, we might aim for 350 general medical units, of which some 190 already exist (counting both government and Church units).

Until it is possible to provide medical units within reasonable reach of everybody, it might be practicable for a Medical Officer or Medical Assistant to visit focal points, such as crossroads or village markets, on a published timetable - a stated day each week or month. Those wanting attention would then congregate at the point. While a visit on a bicycle would be better than nothing, a Land Rover would be preferable, and enable patients requiring admission to hospital to take the opportunity of immediate transport there.

The suggested 350 general units might be made up as :

- 25 Medical Officer Hospitals (Central, General, District and large Church hospitals).
- 50 Principal Medical Assistant Hospitals (Rural Hospitals, and Rural Health Centres with 20 or more beds and more senior staff).
- 100 Health Centres.
- 175 Dispensaries and Dressing Stations.

While exact numbers of different grades of new units required would depend on the grading given to Church units, to reach the above figures we would probably require :

- 110 new Dispensaries and Dressing stations (say 50 Dispensaries and 60 Dressing Stations).
- 30 new Health Centres (or Dispensaries upgraded).
- 20 new P.M.A. Hospitals (or Health Centres upgraded).

This makes a total of 160 new general medical units required.



While it is very desirable to have more new Medical Officer hospitals, we must recognise probable limitations in the numbers of M.O.s, and amounts of funds, likely to be available. In these suggestions I am putting emphasis on the needs of rural areas - where most of the population live and where most of the new units would be.

I would, however, advocate that perhaps two of the new Health Centres and four of the Dispensaries be sited in Blantyre-Limbe - where the greatest concentration of population in the country exists, and is increasing, and where there is at present only one large Central Hospital and a few private practitioners. The three miles which many people may have to walk to reach the Central Hospital, while much less than in most rural areas, is a long way for people to walk who require daily out-patient treatment. Some Limbe inhabitants may have to walk up to five miles, or to get a bus - which some would be unable, and more unwilling, to afford. In staffing such town services the part time services of married women doctors and nurses might be made use of, and private practitioners might be employed on a sessional basis.

In municipalities the building of new units would be paid for from local rates, the cost being reduced by self-help voluntary work where possible, and would conform to town planning regulations and be of permanent construction. Buildings might be combined with other government buildings.

In rural areas the erection of new units would be the responsibility of the local authority, possibly with Central Government help, and again costs should be reduced by self-help - labour and locally available materials provided by the population whom the units are to serve. Subsidy of poorer authorities by the Central Government should be on condition that the authorities do their share. The Government might make grants available in proportion to the sums raised locally for erection of a unit. The scale of government subsidies could depend on



a government estimate of what sum a local rate should raise. Thus a relatively wealthy area might get 5/- from the government for each £1 it raises itself, and a poor area £1 for each £1. The value of self-help work and materials provided by local people might be included in the total of the sum raised by the local authority for the purpose of calculating the Central Government grant, as an incentive to the community to help itself.

The cost of erection of rural units can be greatly reduced by using local materials and traditional building methods, but modern materials and methods produce more satisfactory and permanent buildings. I would advocate a combination of modern with traditional materials and methods (see Appendix II).

It is a waste of time to erect new units unless staff can be recruited and recurrent costs can be met. I have already suggested (page 106) that the cost of staff wages, ~~xxxxxx~~ or a proportion of the cost - depending on what level of government subsidy can be afforded, should be met by the local Council. The same should apply to all recurrent expenditure. Where Churches are able and willing to erect and run new units, and where this fits in with the wishes of a local Council, Church units could be erected and run on behalf of, and in co-operation with, the Council (see pages 117 to 119). The same could apply to other voluntary agencies, if any.

In some cases foreign governments or institutions, or international bodies, may be willing to help with the building and equipment of units. The government service should be able to get help from international agencies, and the Churches are well placed, if given the official backing of the government for their proposals, to approach charitable trusts, persons and institutions, in countries where they have supporters, for help towards specific projects (such as a new ward, a new operating theatre, with equipment, a new latrine block, X-ray apparatus - items for which I obtained such help when I was a Mission M.O.).



### Dressing Stations.

One of these could consist of a traditional building erected by local people through self-help at virtually no cost, together with a good traditional staff house.

This could be staffed by one responsible Orderly, who would dress tropical ulcers and minor injuries and treat such conditions as malaria and hookworm and anaemia - following standard treatment schedules. He could also ~~have~~ give out-patient treatment to cases of tuberculosis and leprosy who have previously been seen, and had treatment ordered, by a more highly trained person. He could also distribute to pregnant women and mothers of young children the dried milk powder which U.N.I.C.E.F. provides from surpluses in developed countries.

If sufficient village midwives can be trained, a dressing station could also act as a base for a village midwife - to deliver patients in their own homes and conduct ante-natal and baby clinics at the unit. The cost of such a unit might be :

Capital : assuming self-help.

	Equipment	£50
Recurrent :	Orderly at £6 monthly, per year	£72
	Drugs and dressings	£100
	Other expenses	£28
	Total	£200 per year

If a village midwife is obtained add £6

monthly for wages - £72

Plus extra drugs and dressings £50

And if a sweeper is employed at £3 per month  
add - £36

Total £358 per year



Dispensaries.

These would be larger, preferably permanent, buildings. They would do general outpatient work and midwifery, delivery being either at the dispensary (the patient going home, or to a resthouse provided, afterwards), or at the patient's home. If a Health Assistant can be obtained and afforded he could be based on the unit, but in any case the Medical Assistant and the Midwife should carry out public health propaganda. Possible costs are :

Capital : Building (see Appendix II)	£350
Equipment	<u>£200</u>
Total	£550
Annually recurrent :	
Medical Assistant at £12 monthly	£144
Midwife at £8 monthly	£96
Orderly at £5 monthly	£60
Sweeper at £3 monthly	£36
Drugs and dressings	£200
Other expenses	<u>£50</u>
Total	£586
Plus, if a Health Assistant is obtained	<u>£144</u>
Total	£730

(The cost of a Health Assistant may be an underestimate, in that the Municipality of Blantyre-Limbe advertised ~~XXXXXXXXXXXXXXXXXXXX~~ on 24th July 1964, for Health Assistants on a scale of £16.9.4d x £1.3.10d to £20.0.10d x £1.8.2d to £25.7.0d per month. The advertisement was in an issue of "Malawi News" which also announced that Health Assistants, paid by the Ministry of Health, have been seconded to work with District Councils).



Rural Health Centres.

These would be larger, take some in-patients (up to twenty), and have more staff. Possible costs are :

Capital :	Building	£950
	Equipment	£300
		<hr/>
	Total	£1,250

## Annually recurrent :

Senior Medical Assistant	£240
Health Assistant (senior)	£240
Two midwives at £8 monthly	£192
One Orderly at £5 monthly	£ 60
Two sweepers at £3 monthly	£72
Drugs and dressings	£250
Other expenses	£75
	<hr/>
Total	£1,129



Rural Hospitals. Principal Medical Assistant Hospitals.

These would be equipped for emergency, and some routine, surgery, and have perhaps 30 beds. Possible costs are :

Capital : Buildings	£1,900
Equipment	£700
	<hr/>
Total	£2,600

Annually recurrent :

Principal Medical Assistant	£600
Senior Medical Assistant	£240
Health Assistant (senior)	£240
Medical Assistant	£144
Two Midwives at £9 monthly	£216
Two Orderlies at £5 monthly	£120
Three sweepers at £3 monthly	£108
Drugs and dressings	£500
Other expenses	£150
	<hr/>
Total	£2,462



Maximum self-help is assumed in estimating building costs - see Appendix II. Calculations of costs were made on the basis of my experience in supervising a group of Mission hospitals and other units up to August 1963. The estimates are very rough, and based on an economically run service with rather low wages compared with recent ~~wages~~ tendencies, so may be too low. Costs of drugs and dressings can vary enormously. Useful treatment for the majority of patients, using relatively few basic drugs, is all that these estimates allow for. To provide all the variety of modern drugs that would, ideally, be desirable would be infinitely more expensive.

If these estimates of needs and costs were accepted and proved accurate the total costs would be, for the new units recommended :

	<u>Capital.</u>	<u>Annually recurrent.</u>
60 Dressing Stations	£3,000	£12,000 to £21,480
50 Dispensaries	£ 27,500	£29,300 to £36,500
30 Health Centres	£37,500	£33,870
20 Rural Hospitals	£52,000	£49,240
	<hr/>	<hr/>
Totals :	£120,000	£141,090

Municipal Health Centres and Dispensaries, being of, probably, a more expensive style of construction, with flush latrines and waterborne sewage, would cost more than is estimated above.

If it were considered to be not socially desirable, or not politically possible, to keep wages down to the levels suggested, costs would be very much greater. This might mean that fewer units could be provided, each being more expensive, and might reduce the number of people who could be employed. The government must decide in the light of financial, social and political circumstances, the extent to which wages should rise, and whether it is necessary to choose between higher wages for those in employment and a larger number of people in employment,



or whether, and to what extent, it is possible to have both. This poses a very difficult problem for the government, and one can only hope that they will be able to make their choices in the interest of long term advance and stability rather than of short term expediency.

If self-help is not practicable on the scale I have assumed, and if wages continue to rise, the above estimates might have to be as much as doubled. There would also be some increase in central administrative expenses on ~~the~~ behalf of the new units, and in costs of District M.O.s and ambulances serving them. Even so, such an advance should be practicable within £500,000 capital expenditure and £500,000 per year recurrent expenditure. If development in Malawi is able to approach that achieved by Ghana since 1950 this should be possible within five years.

So far as possible all units should have telephones in order to be able to seek advice or obtain help from a Medical Officer Hospital when necessary, and ambulance services should be available to take patients to M.O. Hospitals from lesser units. But difficulty in providing telephones or ambulance services should not be allowed to delay the erection of new units if they are otherwise needed and practicable.



## MEDICAL FIELD UNITS

I would strongly recommend the setting up of a mobile Medical Field Unit, or units, on the lines of those in Ghana (see Appendix I).

The Unit should be headed by a Medical Officer with an inclination towards public health work, preferably with training and experience in public health and tropical medicine and hygiene. A medical entomologist/biologist would be desirable and might be seconded from a foreign school of tropical medicine. Other staff would be Medical and Health Assistants, preferably with experience of laboratory work (blood, sputum, urine and stool microscopic examinations etcetera). If possible a nurse, perhaps with Health Visitor training, and at least one woman Medical Assistant, preferably with midwifery training, should be included in the team to save it from being entirely male. (Women may provide points of view, which might not occur to men, on problems, and be valuable in gaining the confidence of, and getting health education across to, women in the villages).

A Public Health Inspector might also be included, and groups of Medical, and Health, Assistant students might from time to time be attached to the unit to help in its work and gain experience.

The M.O., and perhaps one of the Assistants, might profitably pay a visit to Ghana before the unit is set up, to study the work and organisation of the Ghanaian units and, or, if the Ghanaian Ministry of Health could agree, a Ghanaian Medical Field Unit M.O. might be seconded to work for a time with the unit in Malawi.

The unit could visit any part of the country to carry out surveys of the incidence of disease, which should provide valuable information for the Ministry of Health. It could undertake campaigns of treatment of endemic diseases in selected areas, with a view to eradication of these where practicable, combining these campaigns with local campaigns of public health education.



Immunisation campaigns would also be among its functions - smallpox vaccination, immunisation of children against whooping cough, and B.C.G. vaccination against tuberculosis - perhaps in association with Mantoux test surveys to discover the proportion of the population in various areas who have previously met tuberculosis.

It could campaign against mosquitoes, flies, bilharzia snails, bedbugs, ticks and other vectors and pests. Such activity could be in the form of helping to initiate campaigns to be carried on, after the departure of the unit, by the local population and its health staff.

At any time the unit would be ready to abandon its normal planned campaigns to go to help to deal with any epidemic, or other health emergency, in any part of the country. It would try to learn as much as possible about the health problems of Malawi, and to devise techniques for dealing with them. Its unsettled life would probably lead to staff wishing to spend only a few years with it, but experience gained while serving with the unit would be of great value to such staff after their transfer to the regular health services.

The unit might be equipped with Landrover/Dormobile type vehicles in which staff could live and sleep, driven by members of the staff. Some of the Assistants would probably have to learn to drive. The M.O. and the entomologist would probably be able to. But it would be helpful for the unit to include a driver-mechanic to service the vehicles. A cook, and perhaps two servants to help him and the mechanic, and to do other odd jobs, might also be required. If it were not thought beneath their dignity, the servants positions might well be held, for six months to a year at a time, by young people waiting for vacancies as students at Medical or Health Assistant training schools. Clerical work might be done by the health staff, or a clerk might replace one of the Assistants.

The vehicles would have to carry the microscopes and equipment needed by the unit. One might be equipped as a mobile dispensary.



One Landrover might, (not necessarily in the earliest days of the units existence)) carry a mass miniature radiography machine, or perhaps a machine for taking 100 mm X-ray pictures - as being a compromise between miniature and full size X-rays films, with the necessary equipment for development and projection. If the equipment were too bulky for one vehicle two might be used - two Landrovers would probably be more suitable for passage along difficult roads than one large radiography vehicle, such as are commonly associated with Mass Miniature Radiography campaigns, which would be liable to get stuck - and to be difficult to dig out. However, it might be felt that radiography units should be separate from M.F.U.s, which would not prevent them from operating together when desired.

A projector and screen for showing health propaganda films and slides to audiences wherever the unit might be would probably be worthwhile, unless it were felt that film shows should be left to Ministry of Information units.

It is impossible to predict exactly how such a unit would develop, since that would depend on needs and abilities revealed while it is in action, but I believe it would be most worthwhile. Those in Ghana receive frequent praise. If it proves successful, and if finances permit, it could grow and divide to produce two or more units either covering different areas of the country or attacking different ranges of problems.

Experimentally, a section could be provided for a few months with one of the motor launches already on the Lake to visit lakeshore and riverside communities from Liwonde (near Kasupe) to the Tanganyika border. If this proved successful the unit might ultimately acquire its own boat and have a section permanently stationed on the Lake.



An idea of the probable costs of such a scheme could probably best be obtained by a study of how much the units in Ghana have cost, but here are some roughly estimated possible costs :

Capital :

Eight equipped vehicles at an average of £2000 to £4000 per vehicle, depending on type and equipment :

Total : £16,000 to £32,000

Annually Recurrent :

Wages, including provision for passages etc for expatriate staff :

Medical Officer	£3,000
Entomologist/biologist	£2,500
Public Health Inspector	£1,200
Nurse/Health Visitor	£1,100
Driver-mechanic	£200
Clerk	£200
12 Health and Medical Assistants at average £200 each	£2,400
Two servants at £60	£120

Total wages : £10,795

Subsidy towards living expenses while on ulendo (= away from base) :

4 expatriates at 10/- per day	<del>£10,000</del> £730
17 local staff at 5/- per day	£1,551

Fuel, maintenance and repairs of eight vehicles, assuming an average of 4,000 miles per vehicle per year at 1/6d per mile (= £300 per vehicle)

Maintenance of equipment	£400
Drugs, dressings, laboratory reagents etc	£5,000

£10,081

Total of above annually recurrent expenditure : £20,876



By cutting down initially to the Medical Officer, six Assistants, the Driver-mechanic and a cook, and three vehicles, the initial cost might be reduced to £10,000 capital and £10,000 annually recurrent.

For the complete set-up as outlined on page 137 a reasonable figure, allowing for contingencies, might be £28,000 capital and the same annually recurrent. This should allow also for expenditure on a base - perhaps an office at Ministry of Health Headquarters, staffed by a secretary to deal with correspondence and liaison of the unit with the regular health services. Housing would also be required for some staff families, and for staff when the unit, or individual staff members, is at its base.





Girl with baby on back. Near Malindi. 2nd May 1963.

Quite young children have responsibilities as members of the family. Girls take their share of carrying the infants, and help with the cooking. Boys may be required to herd the sheep and goats. Girls generally stay near their homes and mothers. Boys roam much more widely and appear to be less controlled, and given fewer duties, by their parents. It has been said that small girls, helping around the house, get scraps of food from their mothers, and so tend to be better fed than their brothers - and to have a better chance of survival.

The constant carrying of most African infants probably gives them a greater feeling of contentment and security than is the case with European infants left in prams or cots. Certainly I have the impression that African infants cry less than European ones.



**APPENDICES**



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APPENDIX I.

## HEALTH SERVICES AND PLANS IN OTHER AFRICAN COUNTRIES

In planning the development of health services for Malawi it is sensible to look at how other African countries have coped, or plan to cope, with their medical problems. In particular a look at Ghana may be valuable, since there is considerable friendship between that country and Malawi. Ghana is a West African country of about 92,100 square miles, with a population (1960) of 6,690,730. Formerly the Gold Coast, a British colonial possession, it became the independent state of Ghana on 6th March 1957, and a republic within the British Commonwealth on 1st July 1960. As remarked earlier, Malawi may profit from studying how Ghana has advanced from a budget of £14 million in 1950 to one of £128 million in 1961-2. Malawi may also take warning from the startling increase of population in Ghana from about 4½ million to 7 million in 10 years - an indication of what Malawi should prepare for.

Ghana, 1952. The Maude Commission Report.

In Ghana in 1952-3 (Gold Coast, 1953) the estimated expenditure on health services was :

A	Medical	£1,318,380
B	Medical Field Units	£68,120
C	Leprosy services	£27,890
D	Nurses Training College and hostel	£19,370

Total : £1,433,760

Estimated vital statistics for 1952 included :

Birth rate	30 per 1000
Death rate	20.3 per 1000
Infant Mortality Rate	125 per 1000
Stillbirth rate	78 per 1000 live births
Maternal Mortality Rate	18 per 1000 total births



The Maude Commission Report made recommendations, in 1952, for the development of health services. These recommendations included :

That the Chief Medical Officer be made equal in status to the Permanent Secretary.

That the Medical Field Units, Central and District Hospitals, and Health Centres be under Central Government control, and that dressing stations and maternity homes be mainly the responsibility of the local authorities.

That diets for patients should be provided by the hospitals. (At present in Malawi most government hospitals feed their patients. Some mission hospitals require patients to provide their own food - which is cooked by relatives).

That all hospital fees or charges be abolished.

That private practice in government institutions be abolished.

That Councils of large municipalities should employ their own Medical Officers of Health, and should be responsible for operating a School Health Service, a Health Visitor Service, and Maternity and Child Welfare Clinics.

That Urban and District Councils be responsible for routine sanitary measures in rural areas.

That until the country could establish its own medical school, students be sent to United Kingdom, and grade 'A' United States of America, medical schools.

That legislation be enacted to provide for registration and inspection of private nursing homes.

That under a pharmacy and poisons ordinance it should be an offence for unauthorised persons to possess certain drugs.

Priorities for development of health services were given as :

- a. Expansion of Medical Field Units.
- b. Improvement of existing hospital facilities.
- c. Establishment of Health Centres at nodal points.
- d. Increase in the number of dressing stations.



The government accepted the report with a few minor exceptions, but was unable to accept that hospital fees should be abolished (Gold Coast, 1953).

### Ghana, 1953.

The report of the Gold Coast Ministry of Health for 1953 states that, under the Minister of Health, a Permanent Secretary is responsible for execution of government policy in the field of health. A Chief Medical Officer, of equal rank and status, also has direct access to the Minister, and is chief adviser to all other departments and ministries on health matters, and is head of the government medical service and Chairman of statutory bodies - the Nurses Board, Midwives Board, and Pharmacies and Poisons Board.

Medical Field Units, with headquarters in Ashanti, conducted campaigns against trypanosomiasis and yaws, and against epidemics as they occurred. The M.F.U.s included a medical entomologist. Concurrently they conduct surveys of the incidence of disease in rural areas, administer treatment, and promote health education. In 1953 they were largely in the North where the need was greatest, but it was intended that they be developed to cover rural areas throughout the country.

The training of nurses, midwives, sanitary inspectors, and X-ray assistants was mentioned.

Under mosquito control, the oiling of earth drains, and cutting of grass around them, was recorded, along with inspection of houses for breeding sites.

Hospital feeding was on the basis of a varied traditional diet, and cost on an average 1/10d per patient per day.

Physiotherapy for leprosy patients "had still to be undertaken by X-ray staff at most stations".

Principal causes of mortality in Gold Coast hospitals in 1953 were listed as :

Bronchopneumonia 143 cases

Respiratory tuberculosis 132 cases



Tetanus	97 cases
Intestinal obstruction and hernia	94
Diseases of the heart (excluding rheumatic, arteriosclerotic and degenerative heart disease)	75
Malaria	74
Fracture of the skull	71

Accidental deaths included :

Motor vehicle accidents	153
Other transport deaths from accident	49
Bites and stings of venomous animals and insects	30

(However, hospital and recorded accidental mortality, showing such small numbers, is unlikely to be a good guide to community mortality and morbidity). (Gold Coast, 1954).

Ghana. 1954.

The Ministry of Health report for 1954 (Ghana, 1955) mentioned financial stringency - the proportion of government expenditure allocated to medical services fell from 4.2% the previous year to 2.47%, though the actual sum allocated rose by £98,501.

The treatment of 3,503 cases of respiratory tuberculosis was recorded, 1,077 as in patients. The Disease showed a decline in mortality. 1,690 cases of non respiratory tuberculosis were diagnosed, 388 treated as in patients.

Malaria control was discussed. (I consider the following quotations to be of great significance for Malawi) :

"It has been shown that a very high degree of anopheline control will be necessary to eradicate malaria."

"Control (of anopheline mosquitoes) just short of eradication will probably reduce infant mortality but it may well increase mortality and morbidity in older children." (By interfering with the immunity to malaria gained by surviving children in areas where infected bites are frequent).

"Control that permits one or more infected bites a year



(per person) will have very little effect at all". The regular use of suppressive drugs as a malaria control measure was mentioned as difficult to achieve. Other methods of control were larvicides, drainage, and residual insecticides (insecticides sprayed on the inside walls of a house, leaving a residue which kills mosquitoes alighting on the wall over the next few months).

In the field of hookworm the report said "It has been established in South America that the only way to control hookworm is by issuing shoes to schoolchildren. The larvae cannot then penetrate their feet, and the cycle is prevented at least during the years of growth and learning (Ghana, 1955).

Ghana, 1961. Sir Selwyn Selwyn-Clarke's Report.

After a visit in 1961, Sir S. Selwyn-Clarke reported (Selwyn-Clarke, 1962) : "Under the guidance of Osagyefo, The President, Dr Kwame Nkrumah, Ghana has made amazing progress since attaining independence in 1957.....Scientific medicine now meets with almost universal acceptance by the people of Ghana."

He went on to discuss, and make recommendations about, the health services, making some criticisms :

"...a great proportion of the burden of disease and of preventable loss of life in Ghana could be eliminated by raising the standards of environmental hygiene." "The Ministry of Health is completely lacking in a well organised preventive arm..."

"Health centres are valuable,...but the indiscriminate building of these centres....often as a result of political pressure, when existing hospitals and other medical institutions are seriously understaffed, constitutes a disservice to the community." "No more health centres should be constructed until a conference has been held at which strict criteria are laid down for their function, staffing and siting."

"Tuberculosis is not attracting the attention it should from its dangerous nature and infectiousness."



"Emphasis should be laid on the prevention of disease. So much of the overcrowding of hospitals, out-patient departments and clinics is due to patients suffering from preventable conditions, who return to an unhealthy environment only to be reinfected, thus requiring a second, third or further course of treatment."

The Medical Field Units, as usual, were praised : "(They)... have more than proved their worth in combining curative and ~~preventive~~ preventive measures in the fight against endemic and epidemic disease in Ghana." These units originated in 1935 in a campaign against sleeping sickness (trypanosomiasis). Later, campaigns against Yaws, smallpox and the vectors of bilharziasis and onchocerciasis were added to their activities. In them, a medical entomologist works alongside Medical Officers and auxiliaries. Flying columns deal with outbreaks of cerebro-spinal meningitis. Sir Selwyn recommended that M.F.U.s should extend their activity to the immunisation of children against measles, as soon as a satisfactory one dose vaccine becomes available, and against tuberculosis (with B.C.G. vaccine) and tetanus and whooping cough - in addition to their anti-smallpox vaccination. He recommended that the units remain autonomous, but maintain close liaison with regional Principal Medical Officers and Medical Officers of Health.

Preventive medicine is a recurring theme. Preventable illnesses specifically mentioned are :

Malaria, possible means against which include spraying, the addition of antimalarial substances such as chloroquine to salt, and the giving of weekly doses of "Daraprim" (pyrimethamine) to schoolchildren.

Measles, which causes important mortality among children as well as unpleasant side effects such as cancrum oris and blindness.



Tuberculosis, he recommends that all infants, soon after birth - before leaving maternity hospital, for instance, pre-school children, young adults, medical staff, and any others unduly exposed to infection should be given B.C.G. vaccination.

Malnutrition, - ignorance is the cause more often than poverty.

Bowel diseases, - dysentery, typhoid and the like, and

Intestinal worms, - roundworm and hookworm, are all preventable by better sanitation and water supplies. Other preventable diseases in his list are :

Bilharziasis,

Onchocerciasis,

Leprosy,

Sleeping sickness,

Yaws.

(Of the diseases listed onchocerciasis, sleeping sickness and yaws are not now serious problems in Malawi, but in a Malawi list I would include whooping cough and smallpox, and give hookworm a higher place on the list).

"The physician who cures a severe case of typhoid or tuberculosis is far more popular than the Medical Officer of Health who prevents the occurrence of these diseases..." "A Medical Officer in a clinical post cannot neglect patients in order to do preventive work." "Medical Officers of Health in municipalities should be seconded from the Ministry of Health and enjoy the same security of tenure as other staff of the Ministry." They "...should possess fully executive powers and control all health and sanitary staff, with the right of appeal to the Ministry of Health where a municipality fails in its duty in health measures to the community." (These last remarks appear to have been caused by the observation of feelings of depression and frustration among M.O.H.s and sanitary staff due to poor relationships with, or lack of enthusiasm in sanitary matters from, their municipalities. It is to be hoped that such a situation will not arise in Malawi).



Attention is drawn to certain specific sanitary problems such as inefficient digestion of nightsoil at one place where the machinery was "not designed to cope with corn cobs, sticks, stones and rags used for abstersion."

Inadequate refuse disposal is commented upon, and the incineration of suitable types of refuse recommended. Much mosquito breeding was found to be taking place in discarded tins and other containers. The disposal of slaughterhouse and offensive trade wastes could cause a fly nuisance, but wastes stored for two years in fly-proof disposal pits are then inoffensive and can be dug out to provide valuable manure.

Market sites should be carefully selected and should be big enough to allow for rapid growth of the town served. Public latrines and covered dustbins at market sites are recommended.

The need for proper siting of cemeteries, and their regulation, and the registration of deaths, stillbirths and births, is mentioned.

In discussing housing, the erection of buildings and additions not properly authorised is condemned.

It is recommended that the Chief Medical Officer should have a deputy to direct public health work, who should possess the Diploma in Public Health and Diploma in Tropical Medicine and Hygiene.

It is recorded that pay for health inspectors in training is inadequate, as a boy with the West African School Certificate can obtain better pay elsewhere. In order to attract candidates, higher pay for such trainees is advised, plus hostel accommodation with individual bed-sitting rooms for study. (A starting salary of £G 205 x 10 to £G 265 is recommended).

The decision to have a medical school in Ghana is praised. A shortage of Sister Tutors is noted and the sending of selected Ghanaian nurses to the U.K. for Sisters Tutor courses is suggested.



Continuity of service in one region or district is advised, so that an officer can familiarise himself with local problems, and make local contacts.

Overcrowding of hospitals is noted : "Where staff is inadequate, standards of diagnosis, treatment and rehabilitation fall, and there is a constant danger of cross infection and delayed recovery."

The establishment of large diagnostic and curative polyclinics is recommended, with adequate ambulance facilities for conveyance of seriously ill or badly injured persons to the nearest hospital.

Sir Selwyn writes : "...I feel that an efficient almoner's department, in the major hospitals at least, would soon pay for itself and benefit the community."

On the subject of poliomyelitis he notes that it occurs, but it will be a long time before the standard of environmental hygiene removes the "danger" of repeated subclinical infections. He therefore does not recommend an immunisation campaign, but he does recommend immunisation for immigrants to the country.

#### Ghana. The Seven Year Plan.

It seems valuable to summarise the medical section of the present Ghanaian seven year plan, for the financial years 1963/64 to 1969/70 (Ghana, 1964). Under it the following is to be spent on extension of medical services (in addition to recurrent expenditure on existing services, which had risen to around £8 million per year in 1961/62) :

Disease control and eradication	£4,000,000
Regional health services	£5,735,000
Hospital services	£16,880,000
Medical School	£3,500,000
Dental health services	£805,000
Miscellaneous	£140,000

Total : £31,060,000



The hospital services figure includes £1,030,000 for training schools~~xxx~~ and hostels.

Targets under the plan are to achieve by 1970 :

1 physician per 10,000 population,

1 nurse per 5,000 people (including nurses at public health centres),

1 technician (laboratory, X-ray) per 5,000 people,

1 sanitarian~~xx~~ (Health Inspector) per 15,000 people and

1 health auxiliary (Community Health Nurses, Vaccinators, Dressing Station Attendants,) per 1,000 people.

Despite recent rapid progress in health services, these services have been unable to cope with the demands upon them. At some places outpatient attendances have doubled in three years,

The most outstanding contribution to public health has come from the Medical Field Units, particularly in the fields of trypanosomiasis, vaccination against smallpox, cerebro-spinal meningitis and yaws. Leprosy and tuberculosis units have only been operating for comparatively short times, so that it is still too early to assess their results.

Until 1960 scholarships for medical training amounted to no more than 10 a year. The number now is 50. In 1962, 114 new doctors were registered in Ghana, of whom 17 were Ghanaians. Ghana has decided to establish her own medical school, designed initially to turn out 50 graduates a year. In October 1962 51 premedical students were enrolled at the University of Ghana. It was planned to provide facilities for them to start their medical course in October 1964. With 50 medical scholarships a year finding enough places in foreign universities had become a problem. Scholars have gone to many countries, and differences in orientation, approach and even standards, are bound to be reflected in the quality of the medical care when all these students graduate and return home.



There was no top level nursing school in Ghana till 1945. The single one achieved an annual output of only 8 by 1950. In 1961/2 six schools of nursing turned out 265 new nurses and midwives. The increase of other paramedical personnel was also substantial, but even so did not fully meet requirements.

All the training programmes of the country are to be extended. "A new grade of nursing assistant is to be established. These assistants will be recruited from middle or continuing school leavers and given two years training in practical nursing".

The School of Pharmacy produces all the pharmacists required. The newly established grade of dispensary assistant has proved a success, and numbers will be increased.

Other training programmes are for Public Health and Community Health Nurses, and Laboratory Technicians (assistants) and Technologists.

Emphasis during the seven years of the plan will be on :

1. Training of workers, and
2. Rural health.

(The previous emphasis having been on curative medicine and concentrated in towns and large villages).

"During the next seven years an extensive network of mobile and static health facilities will be made available to the rural population."

With World Health Organisation assistance pilot projects for the control of malaria will be continued and extended. These are based on vector control of mosquitoes with residual insecticide, and control of the transmission of malaria with medicated salt,

Substantial help from U.N.I.C.E.F. has been received towards the control of leprosy.

There have been very good results from a joint Ghana Government/World Health Organisation/United Nations Children's Emergency Fund campaign against yaws.



"It must be stressed that preventive medicine is not solely or even mainly the domain of health workers" - co-ordinated effort is needed. Government, local authorities, engineers, agriculturalists, teachers and welfare officers must all play a part.

Rural health services are to be based on Health Centres. These are not to become little hospitals. The doctors in charge will have a public health orientation and will concentrate on the ~~prevention~~ and control of endemic and epidemic diseases and the provision of more adequate maternal and child care. They will also assist both local authorities and Central Government officers in efforts to improve local sanitation.

Though there are no reliable statistics, it is known that at least 100 children die, out of every 1000, before reaching one year of age, and at least 250 of every 1000 do not live to enjoy adult life. This great wastage occurs in the years before a child goes to school, and endemic diseases and malnutrition are the principal causes. The maternal mortality rate is estimated at 17 per 1000 live births.

The implementation of universal primary education provides a convenient focus for the organisation of child health systems. (The educational section of the plan envisages, in 1964, 1,498,000 children in primary, middle and continuing school, and 28,500 in secondary school. The expected figures for 1970 are 2,219,500 and 70,000).

Urban Medical Officers of Health shall become legally part of the Central Government medical service.

Curative services shall be provided from Health Centres, Health Posts, Dressing Stations and other static units, as hospitals will still be inadequate in size and physically out of reach of many for some time to come, but "such curative service as is provided will be deliberately limited so as to leave the health staff free to undertake their primary task of disease prevention and control." "An efficient reference procedure together with a well organised ambulance system will



ensure the rapid transmission of cases from health units to hospitals." "Centres within the rural health services will be able to offer :

1. Simple first aid.
  2. Treatment of a specific number of infections where health post personnel can be trained to make a diagnosis and administer specific treatment according to fixed schedules, e.g. malaria.
  3. Treatment of simple conditions like boils and ulcers.
- Centres with resident Medical Officers will be able to offer a wider range of services....."

"Apart from the health centres mentioned above 150 health posts will be established, and dressing stations, more efficient than the majority of those in existence, will also be built and staffed."

Five new mental hospitals will be built to provide 1,200 beds. In addition, psychiatric units will be provided in central hospitals. The cadre of psychiatric social workers will be increased.

A School Dental Service is envisaged. The recruitment of dental surgeons and training of dental hygienists will be accelerated.

Declared government policy is eventually to provide free health facilities for the entire population of Ghana. This will not however be possible during the period of the present plan. During the period it is proposed to inaugurate a partial National Health Service which will provide free treatment for paupers, for all communicable diseases and accidents, and for children up to school leaving age. It is also proposed that all diagnostic services should be free.



### Nigeria. 1955. Lagos.

In planning services for the main municipality, Blantyre-Limbex, in Malawi, it may be worth looking at how another African town has regarded its health problems. Proposals for Lagos in 1955 (Nigeria, 1955) again complained of cramped and overcrowded outpatient departments at general hospitals. Hospital accommodation in Lagos of 760 beds and 50 cots was thought totally inadequate for the population of 295,000. (Blantyre-Limbe, with a larger population, had 468 beds in 1962).

It was recommended that outpatient clinics and dispensaries be set up in various parts of the town to provide decentralisation and enable the population to get treatment nearer to their own homes.

Three new dispensaries were proposed, each of four consulting rooms - with ancillary accommodation, a records room, lavatories, garages etc., and each staffed by two government Medical Officers, a Nursing Sister and three Nurses. The accommodation would provide facilities for some private practitioners to assist in the outpatient work should they wish to do so.

Total capital costs for the three dispensaries were estimated at £36,750, and annual recurrent costs at £40,000.

### Nigeria. 1955. Southern Cameroons.

A document giving policy for medical services in the Southern Cameroons, in 1955, states (Nigeria, 1955, Sessional paper No 8) :

"Native authorities will be encouraged to introduce registration of births and deaths in their area of jurisdiction."

"The attack on diseases of importance such as malaria, yellow fever, and dengue, will be through control of the mosquito vector."

"Everything possible will be done to lower the incidence of tuberculosis by raising the standards of environmental hygiene, particularly town planning and dwelling house standards."



### Tanganyika. 1956.

A draft plan for the development of medical services in Tanganyika, Malawi's Northern neighbour, in the period 1956-61 stated (Tanganyika, 1956) :

".....as curative medicine is what people understand and what they want, and as in African conditions at present preventive medicine can only hope to be accepted by the people through curative services, it is proposed to devote by far the greater part of the capital sum available from development sources to expansion of the hospital services."

"Even this will not achieve the target of one bed per 1,000 population in government hospitals, which was and still remains the immediate objective."

In rural areas the Health Centre is envisaged as the basis of the medical service. There are various plans for these centres in various countries. Essentially the centre comprises :

1. A dispensary with, generally, a small holding ward.
2. A maternity and child health clinic providing not only for ante-natal and child welfare sessions, but also limited lying-in accommodation and a delivery room.
3. A health office with facilities for health education.
4. Housing for the health centre staff.

"The function of the Health Centre is to provide balanced and integrated curative and preventive services in circumstances permitting effective health education of the public.....the medical assistant or rural medical aid will be the local equivalent of the general medical practitioner....the health nurse and the village midwives will operate a domiciliary midwifery service."

"While it is visualised that ultimately dispensaries will be replaced by Health Centres, this will not be possible for many years to come for financial reasons and because there will not be sufficient trained personnel."



The plan suggests one Health Centre for 40,000 to 50,000 people, with satellite dispensaries. This would require about 160 Health Centres for Tanganyika (land area about 342,038 square miles, total population estimated - 1962 - at 9,549,400).

The proposed staff per Health Centre is :

- 1 Medical Assistant (in charge)
- 1 Health Nurse
- 1 Assistant Health Inspector
- 2 (or more) Village Midwives
- 2 Nursing Orderlies
- 1 Health Orderly
- 2 Subordinate staff.

These centres are considered "to provide an admirable opportunity for combined effort by local and central government." It is suggested that the Local Authority should be responsible for :

- a. Erection and maintenance of all buildings, including staff housing.
- b. Provision of equipment, drugs, dressings etc.
- c. Direct employment of village midwives, health orderlies and other subordinate staff.
- d. Salaries and other charges of seconded staff.

The Central Government (Medical Department) should, it is proposed, be responsible for :

- a. Training of personnel.
- b. Supervision by senior medical and public health staff, i.e. Medical Officers and Health Visitors and Health Inspectors.
- c. Employment of Medical Assistants, Health Nurses and Assistant Health Inspectors, the government to subsidise the costs of these for poorer local authorities. (Normally these staff would be government employees, paid by the Medical Department, and the local authorities would reimburse the cost of their wages to the central government).



The estimated capital cost of such a centre, with staff housing, is around £5,100, less if some buildings already exist. The cost of equipment for such a centre is estimated at about £300, but U.N.I.C.E.F. and W.H.O. might provide equipment - and also vehicles to facilitate supervision by senior staff and to transport patients from Health Centres to District Hospitals, and bicycles for centre personnel.

All rural medical aids employed (in 1956) by Native Authorities, at different rates, will transfer to the central government, and their salaries will be reimbursed to the central government by the native treasuries. Salary scales are given as :

Medical Assistant, and Assistant Health Inspector,	£162 (178) to £318 (350).
Health Nurse	£90 (99) to £156 (172).

The (1956) costs of a centre are given as :

<u>Capital</u>	Buildings	£5,100
	Equipment	£300
	Total.	£5,400

Annually recurrent

1 Medical Assistant	£162	(178)
1 Assistant Health Inspector	£162	(178)
1 Health Nurse	£102	(112)
2 Village Midwives at £60	£120	(132)
5 Subordinate staff at £60	£300	(330)
Total of above :	£846	(930)
Plus 25% of basic salary pension element	£107	
Total cost of personal emoluments per year		£1,037
Maintenance costs at 2½% per annum		£127
Drugs etc. per annum, estimated		£150
Total recurrent cost per annum :		£1,314



Capital Cost of 40 such centres :	£216,000
Recurrent cost per annum of	
40 such centres :	£52,560

The greater part of the time of one Medical Officer in each District should be devoted to the supervision of the District's rural~~l~~ services, and he should have a Health Visitor and a Health Inspector to assist him.

A map with the plan shows all government and mission medical units, with 50 mile radius circles drawn from government hospitals to indicate an arbitrary "sphere of influence", in order to show at a glance where spheres of influence overlap and which areas have no coverage.

Village midwives are sponsored for training by the Native Authorities to whose employment they return from the training centre.

Selected male nurses are given a year's training in massage, infra red lamp treatment etc., to qualify as physiotherapy assistants. A training school at Dar-es-Salaam trains many grades of staff.

Existing medical units require (in 1956) an establishment of 169 medical practitioners, made up as :

137 to man units

27 (20%) leave, sickness and casualty pool

5 reliefs for administrative officers, specialists and Senior Medical Officers (clinical).

The expanded service would require 187 Medical Officers.



Other staff to be increased in numbers under the expansion plan were :

	1956	Proposed establishment.
Nursing Sisters	130	210
Health Visitors, (partly interchangeable with Nursing Sisters)	21	41
Sister Tutors	8	10
Sister Housekeepers and Housekeepers	6	13
Physiotherapists	4	6
Health Inspectors	33	44

(As local authorities employ their own Health Inspectors the figure 44 can be reduced to 38 ).



## MKOPE HILL - A STORY OF INITIATIVE



Mkope Hill. The old dispensary with its staff.

Mr Geoffrey Chioko, the Medical Assistant in charge, stands at the left. Then come three Orderlies, then the midwife.

The small round shelter, behind the midwife, is the kitchen. The walls of the Dispensary are of sun-dried mud bricks, the roof of pole and thatch.

Soon after my arrival in Nyasaland, in November 1958, Mr Chioko pointed out to me that Mkope Hill Dispensary was in a dilapidated and unsatisfactory condition, and needed replacement. I replied that there was not sufficient money available to replace it. Mr Chioko offered, if I would obtain building materials, to construct a new Dispensary himself, employing a minimum of paid labour. After some doubt, I agreed, not wishing to discourage initiative. Cement was bought and moulds borrowed, and hollow cement blocks were cast, by Mr Chioko and his helpers, for the building. Through the receipt of a timely donation, it was possible to buy corrugated asbestos, and timber, for the roof, and steel window and door frames - impossible for the white ants (termites - 'chiswe') to eat.





Mkope Hill. The new Dispensary under construction.

Mr Chioko with his builders. The tree to the right is a mango.

Building was delayed by unsuccessful negotiations for a government grant-in-aid. The new Dispensary was opened on 23rd March 1961, and cost about £600 altogether - perhaps a third of what it would have cost to get a builder to erect it. It was designed by Mr Chioko and myself to allow for the building of a ward at each end when finance became available. The old Dispensary was used as a rest-house for patients, and their relatives, from a distance. In 1961 the building of a ward for women and children (ten beds) was started, the estimated cost being £500. The Witwatersrand Native Labour Association (Wenela) African Interest Fund (interest earned by money held by Wenela on behalf of its African employees) granted £250, and the Ministry of Health promised a 50% grant. Some Churches donated money for equipment. The ward was opened in 1963.

My successor, in his report for 1963 (Diocese of Malawi, 1964), stated that, from a desire to encourage the enterprise of Mr Chioko, a further £500 had been allocated to enable him to add an 8 bed male ward, and an out-patient shelter, to the unit.





Mkope Hill. The new Dispensary.

The Dispensary is complete, but wards are yet to be added. The seated women are outside the door of the labour ward, where the midwife is seeing patients. Where they are seated, the women's ward was later added - a covered space (khonde) separating it from the building shown above (the roofs and foundations being continuous).

It is partly from my experience with the new unit at Mkope Hill that I have derived the ideas and plans which follow in APPENDIX II. The cost of the unit at Mkope is more than I have allowed in these plans - in these plans I have estimated for the use of sun-dried mud blocks in stead of cement blocks (but with permanent roof and good cemented foundations), and with free labour from self-help raised locally. While Mr Chioko donated his labour (in addition to doing his medical job) at Mkope, local people who worked on the unit were paid - so that the unit was not built by self-help. (Self-help in medical projects was hardly practicable while health was under the Federal Government. It remains a point of great interest to see how much self-help will materialise and be made use of under self-government. So far it has been used more for schools and roads than for medical units).



APPENDIX II.

## COMBINATION OF MODERN AND TRADITIONAL BUILDING METHODS.

For rural medical units I suggest that foundations be built of rocks, concrete blocks, or well burned bricks, with cement mortar, and covered with a 4" concrete slab, the lower surface of which should be at least 6" above ground level, and the edge of which should project at least 3" out from the walls. (Such a foundation should be impregnable to termites, but to keep termites out of the building the 3" projection around the building, of the floor slab, must be kept free from rubbish and termite tunnels by regular sweeping).

For a dispensary building, or ten bed ward, 20' x 25' (500 square feet) this means, if rock is available for the foundations, some 6½ cubic yards of concrete. With a strong mixture of 1 part cement, 2 parts clean sand, and 4 parts broken rock, this would require for the floor slab 30 bags of cement, or for a 3" floor slab 23 bags. A 1 cement/3 sand/6 broken rock mixture, which is often said to be adequate, would require less cement.

On the floor slab, walls can be built of sun dried mud bricks with mud mortar. Old sun dried mud brick walls on Likoma Island demonstrate that if these are properly made out of the right kind of mud, and given reasonable protection against water from above (by a good roof) and termites from below (by sound foundations) they are as hard as concrete and last indefinitely. (The blocks I am thinking of are intermediate in size between the standard burnt brick - 9" x 4½" x 3" - and the cement or concrete block - 18" x 9" x 6").

Lintels, window and door frames, and doors, can be made of local timber, but if money is available reinforced concrete lintels and sills, and steel window and door frames, are preferable.

For the sake of coolness and ventilation walls should be at least 10' high, with ventilation gaps between them and the roof - which can be filled with wire gauze if an attempt is being made to exclude mosquitoes.



The roof may be of local materials - pole and thatch - which is cheap and cool, but this involves a fire risk and the prospect of annual repairs. If possible it should be of permanent materials - such as sawn timber, treated against rot and insects, and 24 gauge corrugated iron. Corrugated asbestos is cooler and less noisy, (heavy rain drums on iron, and hot sun makes it creak as it expands), but it is liable to be broken in transit or by inexperienced handling. Corrugated aluminium has its advocates, but can work itself off its nails by expansion and contraction with temperature variations, and must be very securely fixed against removal by high winds.

Corrugated iron does not insulate well against the heat of the sun, but a high roof with ventilation spaces mitigates this. Ceiling boards provide insulation, but should not be used unless the space between them and the roof can be made absolutely bat proof. Even without ceilings, bats may colonise a roof if any spaces are left between, for instance, the ridging and the sheets of corrugated iron. This can sometimes be prevented by hammering in the ridging to fit the corrugations, or by filling spaces with mud, cement or papier maché. Bat droppings accumulating on a ceiling can cause its collapse, and in any case bats cause an unpleasant smell, a nuisance through their droppings falling into the building, and noise. Wide open spaces - six inches or more between roof and wall top, for instance, are not likely to be colonised by bats, but such spaces, unless blocked by wire netting, let bats in to colonise the spaces between the roof beams and the roofing, if such have been left.

Very approximate costs for the 20' x 25' floor area unit might be :

Cement	£25
24 gauge corrugated iron and ridging	£40
Timber	£20
Nails etc	£10
Transport of materials	£10

Total cost of materials above : £105



Steel window and door frames, if used, might add a further £100 to the cost of materials.

The central government might provide expert advice and supervision, the local people the labour and the mud bricks (as self-help). Total costs must vary widely with materials used, distances over which materials must be transported, and the extent to which some labour has to be paid. Costs for materials such as cement and corrugated iron might be kept down by bulk buying by the government. For the purpose of discussion a figure of £250 for a 20' x 25' dispensary block, and the same for a 20' x 25' ward with an 8' x 20' covered space (khonde) (see the plans which follow), is *SUGGESTED*.

Houses for staff might be built to good local traditional standards by self-help, with pit latrines and outside kitchens, at a cost for materials of a further £50 per 20' x 25' block at the medical unit, making the total cost per block around £300. When funds become available better permanent staff houses should be built.

Water supply would depend on local circumstances but a further £50 may be estimated for the provision of a protected well and, or, hand pump, bringing the cost to £350 for the initial block of each unit and £300 for each subsequent block. If labour were paid a cost of £500 to £600 per block might be reasonable. Piped water supply, and water-borne sanitation, highly desirable where possible, would further add to the cost, but, assuming that economy is necessary, I would assume that most units would initially use outside pit latrines.

I would suggest as a basic plan a simple design, standardisation of which might enable economies to be made in, for instance, the bulk purchase of roofing materials. On following pages a possible design for a unit is set out, built up of 20' x 25' blocks, with 8' covered spaces between - to act as verandahs where people can rest in the shade.



The first block would comprise a Dispensary, require one staff house, and cost about £350.

The first, second and third blocks would comprise a Rural Health Centre, require three to five staff houses and cost about £950.

The complete complex would form a Rural Hospital (Principal Medical Assistant Hospital), require five to seven staff houses and cost about £1,850.

In some cases staff living near their place of work would stay in their own homes and not require staff houses.

Latrines, washing places and kitchens might initially be of traditional materials and design, but should as soon as possible be replaced by adequate permanent structures, preferably with piped running water - which would also, where possible, be laid on to the dispensary, labour ward and theatre, with adequate provision for drainage. Whatever form the latrines take there must be a sufficient number for outpatients and in-patients and staff, and they must be kept clean.

Guttering would carry rainwater away from entrances to doors and khondes. Where drainage is practicable guttering should take all rainwater to rones leading to drains.

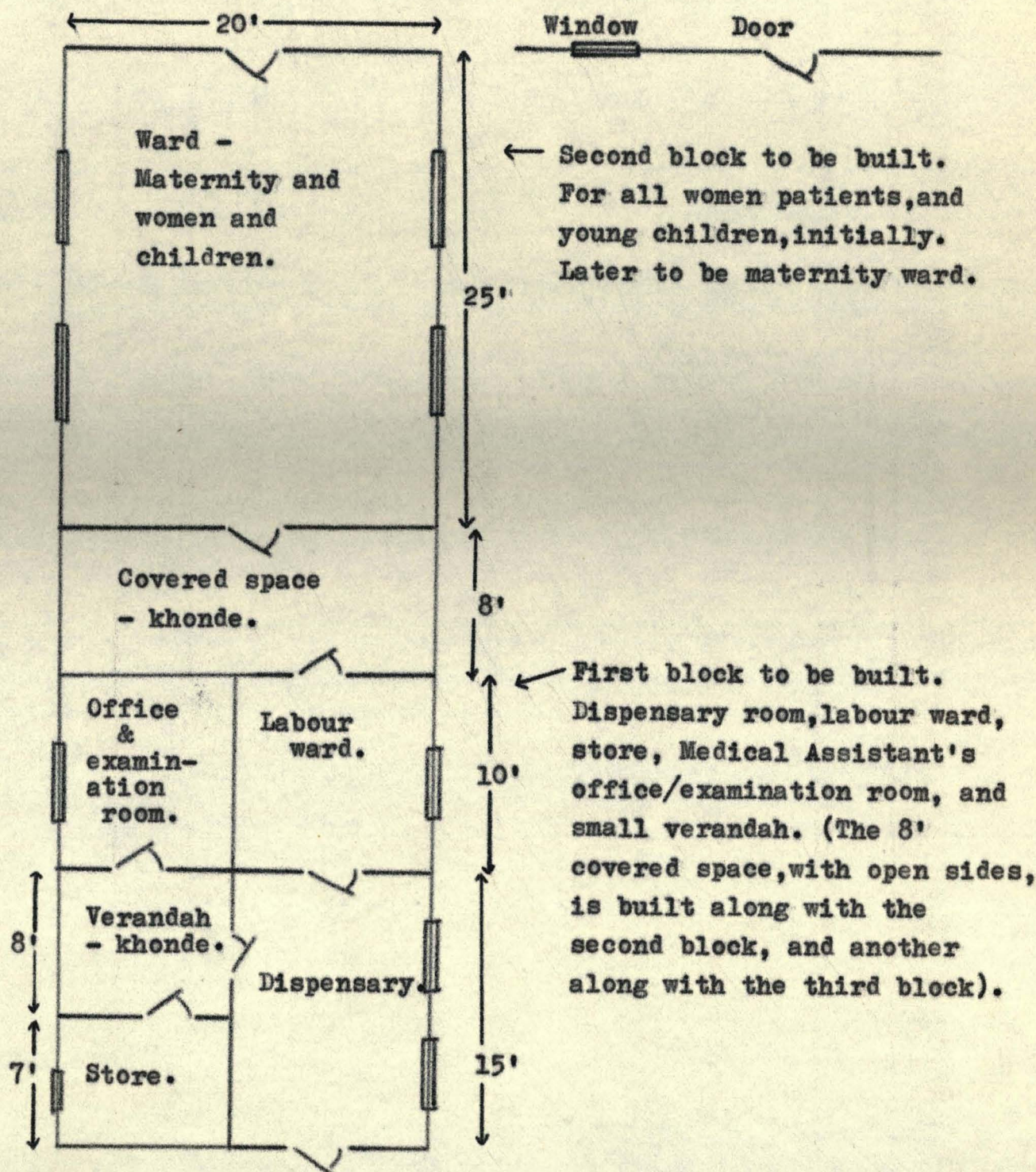
A desirable addition to such a unit, at any stage, would be one or more small isolation wards, which could initially be traditional type houses, where persons suffering from infectious diseases can remain for treatment. This is especially desirable for children suffering severely from whooping cough or measles who require hospitalisation - but cannot be put in a general ward with other children. They could stay in such isolation wards with their mothers.

Another useful addition would be rest houses for patients' relatives, and for some out-patients who cannot readily go home between treatments. These could be either traditional type houses or permanent buildings, depending on finance.



Suggested plans for proposed blocks, from which units can be built up in stages.

Scale : one eighth of an inch to the foot.

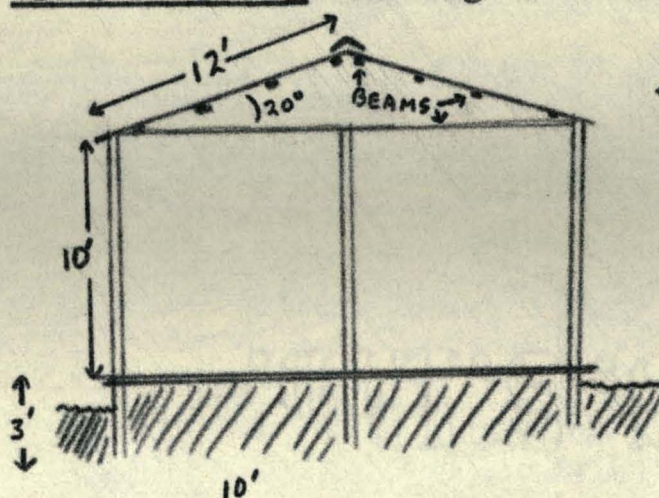




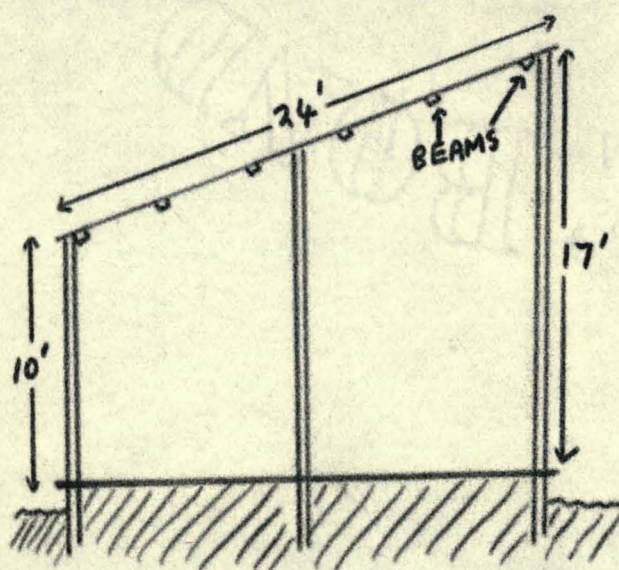
The third block to be built would be symmetrical with the second, on the other end of the first block. It would be useable as a lecture room for health education, and for the holding of maternity and child welfare clinics, or as a male ward. When the complex is complete there will be four ward blocks (2nd, 3rd, 5th and 6th) - made up as :

Maternity ward (2nd block),  
 Womens' and childrens general ward,  
 Mens' ward, and  
 Lecture room/maternity and child welfare clinic room,  
 (useable as an extra ward in emergency).

Cross sections : one eighth of an inch to the foot approx.



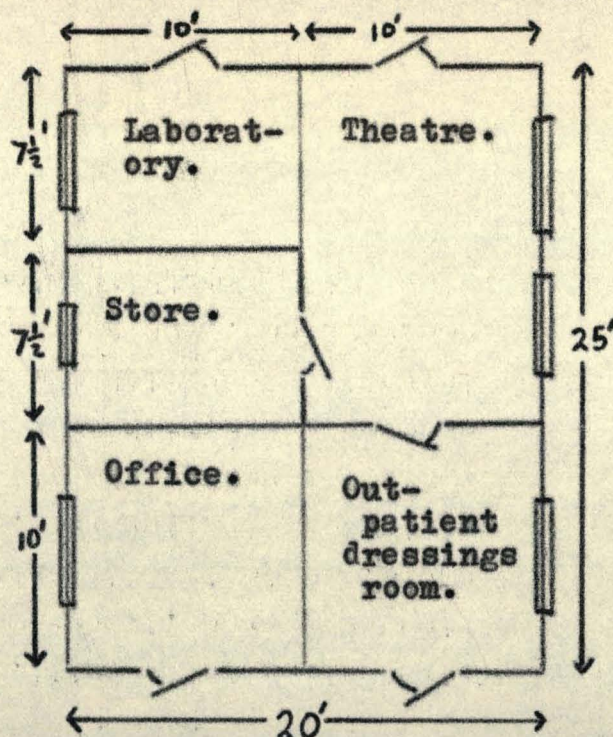
← Section showing gable roof. With this the covered spaces ~~at the sides~~ would need no walls at the sides, though a low wall at one side might be useful as a windbreak and for sitting on. This is the more conventional roof shape. End walls should be gable rather than hip - for simplicity in building.



← Alternative section with mono-pitch roof. This would need the 17' wall to be built up to the roof at the covered spaces in order to give shade and protect from the wind. In the centre block the roof could rest on the centre and side walls, but in



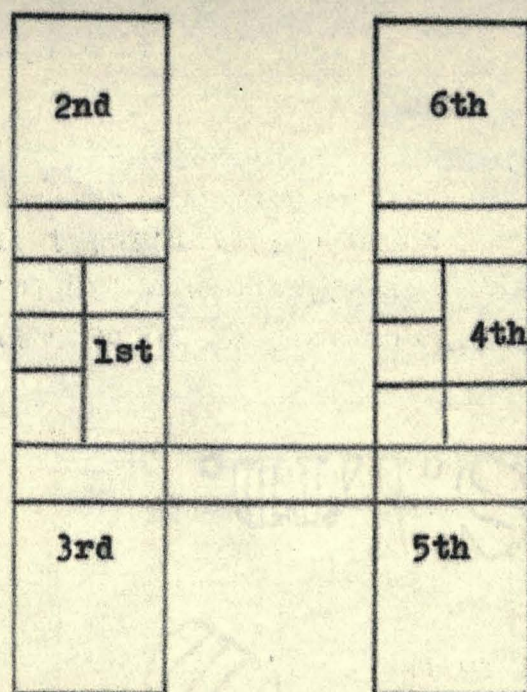
the ward blocks trusses would be needed.



← Fourth block to be built - same scale. Operating theatre, laboratory, second office (for Health Assistant and Midwives), out patient dressing room and second store. Criticism might be made of opening the dressings room and store off the theatre. This has advantages of convenience, but if it were felt to involve a danger of infection in the theatre the plans for the block could be re-arranged.

Outline of completed complex : Scale 1 mm = 1 ft approx.

A covered way joins the two sets of blocks. The order of building is noted on the blocks. On some sites it would not be



practicable to build the two rows of blocks parallel to each other, or to link them easily by a covered way.



APPENDIX III.ESTABLISHMENT CONTROL : 1ST AUGUST 1964.

The following establishment list, as at 1st August 1964, was received from the Ministry of Health with their letter 6371/68 of 19th September 1964 (see page 28). It does not include the staff in ranks below Principal Medical Assistant and Regional Health Assistant.

HEADQUARTERS :

Secretary for Health	Gp. 4	Dr R. Park (CG)
Tuberculosis Specialist	Gp. 9	Vacant
Senior Assistant Secretary	Gp. 9	G. B. Baird
Personnel Officer	Gp. 12	G. W. Parker (CG)
Establishment Officer	E.O. III	H. D. G. Coffin (CG)
"	E.O. II	Vacant (P. D. Zgambo)
"	E.O. I	P. D. Zgambo
		(K. L. J. Munthali on loan)
Chief Nursing Officer	SS. 28	Miss G. V. Wesseks (CG)
Chief Health Inspector	E.O. IV	G. A. J. Hopper
Accountant	E.O. IV	A. E. Willer (CG)
Sub Accountant	E.O. II	S. D. Chikafa (E.O. III)
Departmental Inspector	E.O. II	B. D. Mackay (CG)
2 Stenographers	SS. I	Miss M. Swift (CG)
	SS. I	Miss G. Guider (CG)

MEDICAL STORES

Principal Pharmacist	Gp. 10	H. R. Durrant (CG)
2 Pharmacists	T.O. I/II/III	Vacant
		Vacant
Accountant	E.O. III	A. Weekes
Executive Officer	E.O. I	Vacant

PUBLIC HEALTH LABORATORY

Director	Gp. 7	Vacant
1 Laboratory Technician	T.O. IV	R. G. Kyte (CG) (T.O. III)
1 " "	T.O. III	Miss M. Faasen (CG)
1 Public Analyst		Vacant

REGIONAL HEALTH INSPECTORSBlantyre:

Regional Health Inspector	T.O. I/II/III	L. Ellis (CG)
" " Assistant	T.O. I	F. Maloya

Lilongwe:

Regional Health Inspector	T.O. I/II/III	F. K. Baraf (CG)
" " Assistant	T.O. I	F. Jamestall



Mzuzu:

Regional Health Inspector T.O.I/II/III Vacant  
 " " " T.O.I Vacant

Zomba:

Regional Health Inspector/Tutor T.O.I/II/III H.T.Hodgson (CG)  
 " " Assistant T.O.I O.M.Namutwa

QUEEN ELISABETH HOSPITAL, BLANTYRE.

Senior Medical Superintendent	Gp.7	Dr Ben Dashan (CG)
2 Surgical Specialists	Gp.7	Dr J.A.A.Borgstein (CG)
		Mr R.C.Buchanan (CG)
Medical Specialist	Gp.7	Dr D.Beiran (CG)
Anaesthetist	Gp.7	Dr S.L.Chanda (CG)
Ophthalmologist	Gp.7	Dr O.S.Peacock (CG)
Radiologist	Gp.7	Vacant
Obstetrician/Gynaecologist	Gp.7	Dr(Mrs) O.C.Hoyle (Sessional)
5 Medical Officers	SS.23	1. Dr J.M.T.D'Souza (CG)
		2. Dr T.W.Jackson (T)
		3. Dr Y.M.Misomali
		4. Dr A.C.Borgstein (P.T.)
		5. Dr A.W.Harris (P.T.)
		Dr A.O.Jagot (P.T.)
		Dr M.N.S.Ashton (J.R.M.O.)
		Dr A.C.M.Bijl (P.T.)
Dental Surgeon	SS.23	T.R.Scott Mason (CG)
Dental Mechanic	T.O.I/II.	N.H.Gidley (CG)
Pharmacist/Secretary	T.O.IV	L.J.D.Harris (CG)
" "	(Leave 20.7.64 - 23.9.64, Miss Maslen)	
	T.O.I/II/III	Mrs S.Deane (T)
	(Leave 5.10.64 - 31.10.64, Miss Maslen)	
Radiographer	T.O.I/II	C.Milton (CG)
Physiotherapist	T.O.I/II	Mrs E.S.Whiteley (P.T.)
Executive Officer	E.O.III	T.Armitage (CG)
2 Clerical Officers	T.C.A.	1. Mrs F.E.Parker (T)
		2. Mrs M.M.Smithyman (T)
Orderly Steward	E.O.I	J.Mbekena
Matron	SS.27	Miss E.Pedley (CG)
"	SS.26	Vacant
5 Sisters	SS.24	1. Mrs S.N.B.Sondo (CG)
		2. Miss S.E.A.Rose (CG)
		3. Vacant
		4. Vacant
		5. Mrs J.D.Harvey (CG)
23 Staff Nurses	T.O.I	
	1. Mrs P.E.M.Jonga (T)	Mrs H.Gray (PT)
	2. Miss M.Manda (T)	Mrs J.G.Kristiansen (PT)



(Staff Nurses)	3. Mrs J.Mondon	(T)	Mrs M.Gribbon (T)
	4. Mrs R.Muwamba	(T)	
	5. Mrs T.M.Mbekean	(T)	
	6. Mrs C.L.Green	(T)	
	7. Mrs P.A.Ademubi	(T)	Resigned 20.8.64
	8. Miss J.Duma	(T)	
	9. Mrs R.G.Corbett	(T)	
	10. Mrs A.E.Betting	(T)	
	11. Mrs G.A.Smith	(T)	(Ward Attendant)
	12. Mrs M.I.Bannerman	(T)	(Ward Attendant)
	13. Mrs H.Clow	(T)	
	14. Miss E.Mauluka	(T)	
	15. Miss F.Daka	(T)	
	16. Miss M.B.Mwali		
	17. Mrs Misomali		
	18. Mrs I.A.D.Brydon	(P:T:)	
	19. Mrs B.R.Moroney	(T)	
	20. Mrs J.G.J.Price	(T)	(Ward Attendant)
	21. Mrs J.K.Barnett	(CG)	
	22. Mrs J.Lulker		
	23. <del>Miss F.Daka</del>		

CHIKWAWA.

Medical Officer	SS.23	In abeyance
Principal Medical Assistant	T.O.I/II	F.Gonani

CHIRADZULU.

Principal Medical Assistant	T.O.I/II	M.F.Lewis
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CHOLO.

Medical Officer	SS.23	Vacant
Principal Medical Assistant	T.O.I/II	(Dr R.J.Harvey - voluntary) H.C.Mlanga

CHINTECHE.

Principal Medical Assistant	T.O.I/II	Vacant
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DEDZA.

Medical Officer	SS.23	Vacant
Principal Medical Assistant	T.O.I/II	R.Thindwa

DOWA HOSPITAL.

Medical Officer	SS.23	Vacant
Principal Medical Assistant	T.O.I/II	M.Kawamba

FORT JOHNSTON.

Medical Officer	SS.23	Vacant (Dr L.A.Anderson)
Principal Medical Assistant	T.O.I/II	Vacant

FORT MANNING.

Principal Medical Assistant	T.O.I/II	B.Mchungula
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KARONGA HOSPITAL.

Medical Officer	SS.23	Vacant (S.C.Mwenifumbo)
Principal Medical Assistant	T.O.I/II	Vacant at Kochira)



KASUNGU HOSPITAL.

Medical Officer	SS.23	In abeyance
Principal Medical Assistant	T.O.I/II	G.Kunkwenzu

KOCHIRA LEPROSARIUM.

Medical Superintendent/Leprologist	Gp.7	Dr G.Currie (CG)
Staff Nurse	T.O.I	Vacant

KOTA KOTA.

2 Medical Officers	SS.23	1. In abeyance 2. Vacant
Principal Medical Assistant	T.O.I/II	A.G.McLande

LILONGWE.

Medical Superintendent	Gp.9	Dr Ben Menachem (Acting) (CG)
2 Medical Officers	SS.23	1. Dr A.Ur (CG) (W.G.de Clive 2. Dr A.Rippin (CG) Lowe - Dental Surgeon)(CG)
Pharmacist/Secretary	T.O.I/II/III	Vacant
Radiographer	T.O.I/II	Mrs E.E.Hopkins (CG) (at Zomba)
Matron	SS.26	Vacant
Male Tutor	SS.26	Vacant
Sister	SS.24	Vacant
12 Staff Nurses	T.O.I	1. Mrs N.K.Chaudhri (T) 2. Mrs G.Misengo (T) 3. Mrs A.M.Power (T) 4. Mrs J.E.Rees (T) 5. Mrs J.Waterfield (T) 6. Mrs J.D.Hannah (T) 7. Mrs M.Jeffrey (T) 8. Mrs J.M.Partridge (P.T.) 9.,10.,11.,12., Vacant

LIWONDE.

Principal Medical Assistant	T.O.I/II	B.B.Samwa
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MLANJE HOSPITAL.

Medical Officer	SS.23	Dr(Mrs) K.M.Robertson (T)
Principal Medical Assistant	T.O.I/II	S.D.Kumsinda

MZIMBA HOSPITAL.

2 Medical Officers	SS.23	1. In abeyance 2. Dr H.W.Bwanausi (T)
1 Principal Medical Assistant	T.O.I/II	B.P.A.Kulemeka

NCHEU HOSPITAL.

Medical Officer	SS.23	Vacant
Principal Medical Assistant	T.O.I/II	Vacant (P.D.Asani at Public Health Laboratory)

NKATA BAY.

Medical Officer	SS.23	Vacant
Principal Medical Assistant	T.O.I/II	Z.Sibale



PORT HERALD.

Medical Officer	SS.23	Dr L.A.R.Starmans (CG)
Principal Medical Assistant	T.O.I/II	G.Nyirenda

SALIMA.

Medical Officer	SS.23	In abeyance
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ZOMBA.

Medical Superintendent	Gp.9	Dr S.V.Bhima
2 Medical Officers	SS.23	1. Dr A.Kahane (CG)
		2. Vacant
Dental Surgeon	SS.23	F.L.Flook (CG)
		(Leave 5.8.64 - 30.10.64)

Pharmacist	T.O.I/II/III	L.Shear (CG)
Matron	SS.26	Miss P.M.Loney (CG)
Sister	SS.24	Miss B.I.McNulty (CG)
12 Staff Nurses	T.O.I	1. Mrs K. von Beneke (T)
		2. Mrs N.L.Backhouse (T)
		(Resigned 18.8.64)
		3. Miss M.L.Phallaza (T)
		4. Miss E.Grant (T)
		5. Mrs M.E.L.Horne (T)
		6. Mrs A.Cameron (P.T.)
		7. Miss C.M.Mwamlima (P.T.)
		8. Mrs M.Hosking (P.T.)
		9. Mrs B.T.Iommi (P.T.)
		10. Mrs A.Kahane (P.T.)

ZOMBA MENTAL HCSPITAL.

Medical Superintendent/Psychiatrist	Gp.7	Vacant
Charge Male Nurse		Vacant



APPENDIX IV.

## FOOD IN MALAWI

Some figures extracted from tables in a textbook of nutrition (Nicholls et al., 1961) are of interest :

Contents per 100 grammes :	Protein (g.)	Calories (Kg.Cals.)	Calcium (mg.)	Iron (mg.)	Thiamine (microg.)	Nicotinic acid (mg.)
Maize meal (96% extraction)	9.5	348	18	3	350	1.0
Maize meal (60% extraction)	8.0	337	9	1.5	50	0.6
Manioc fecula (cassava flour)	0.5	348	12	0.3	0	0
Kidney bean	24.0	306	120	8	450	2.3
Dried fish	42	204	180	2.0	60	5.0
"Amaranth" leaves (various species)	4.0	40	200	3.5	150	0.7
Yellow pumpkins	1.2	35	20	0.8	50	0.6
Bananas	1.2	100	8	0.6	90	0.6
Ripe mangoes	0.7	59	20	0.5	60	0.2

All the above are common foods in Malawi. In most of the country the staple carbohydrate is maize, usually served as a porridge (nchima) with a "relish" (ndiwo) of beans, fish or vegetables. No salt is used in making the porridge, but the relish is salted. Low extraction flour (ufa) is preferred generally, the bran being discarded. It is prepared by pounding in wooden mortars, or by grinding in one of the mills which are now a popular form of small private business enterprise.

The mills also grind high extraction meal (ngaiwo), which includes most of the bran. This is more economical, and contains more protein and vitamins, and is thus usually preferred by institutions which have to plan the feeding of large numbers. It does not keep so well as ufa, tending to go bad, and the food prepared from it is not thought so palatable.

In some areas, including Likoma and Chizumulu islands,



flour from the cassava root is the staple carbohydrate, and is used for making the porridge.

The most important difference between maize and cassava flour is in protein content. A person eating 700 g. of maize flour (60% extraction) per day is getting 56 g. of protein from it. With 100 g. of beans, he is getting a total of 80g. of protein. Thus, though it is vegetable protein and not of high biological value, his staple carbohydrate food is providing most of his requirements of protein. If he has fish occasionally instead of beans this will give him some animal protein. But a person eating 700 g. of cassava flour daily is only getting  $3\frac{1}{2}$  g. of protein from it. With 100 g. of beans this makes  $27\frac{1}{2}$  g. of protein per day, less than half the requirements usually suggested for an adult (55 to 146 g. - Nicholls, 1961). Thus, in areas where cassava is the staple carbohydrate, other sources of protein become of much more importance.

Medical Assistant trainees on Likoma Island appeared to thrive on a diet of maize porridge (96% extraction meal) and beans, daily, varied with rice, and fish about twice a week. Among the local population there was much subnutrition, and a few students who lived at their homes on the island, and fed at home rather than at the hospital, appeared less healthy than their hospital-fed fellows. (Apart from protein, the hospital fed trainees had as many calories as they wanted - unlike the islanders). Maize also contains more iron, vitamin A, and B vitamins, than cassava. Plentiful mangoes are a source of vitamin A, as are green vegetables.

Various types of millet are grown throughout the country, and used to vary the diet - and for beer making. Rice is also grown in some areas. Many people, particularly the more educated and prosperous, now make considerable use of imported wheat flour and wheat bread. Sweet potatoes and yams are another carbohydrate food. Irish potatoes are also grown - but often for sale to Europeans rather than for consumption in the villages.



Summary of foods available to villagers in Malawi.

- Carbohydrates: Maize  
Cassava  
Millets  
Rice  
Sweet Potato  
Irish Potato (mainly for sale to Europeans)  
Yam
- Pulses etc.: Kidney beans  
Numerous other kinds of bean and pulse  
Groundnuts
- Animal foods: Fish, fresh and dry.  
Poultry  
Goats, sheep, cattle  
Guinea fowl, pigeons, cormorants and other wild birds  
Hippopotamus, buck and other wild animals.  
Eggs  
Locusts, termites, sausage flies, nkungu flies.
- Vegetables: Pumpkins  
Pumpkin leaves and flowers, cassava and many  
wild leaves, sweet potato leaves.  
Tomatoes, onions, peppers, egg plants (all more eaten  
by Europeans and Asians).
- Fruits:  
(and nuts) Mango  
Pawpaw  
Banana  
Various wild fruits  
Coconuts  
Citrus fruits - ~~mainly~~ for sale to Europeans  
Avocados " " " (largely).  
Palmyra palm nuts (chewed by children)  
Tamarind  
Cashew nuts (grown more by Indians)  
Cape Gooseberry, custard apple, soursop, guava,  
watermelon, grenadilla (grown more by or for  
Europeans).  
Baobab fruits ("tartaric" tasting pulp)

The above list is not exhaustive. Certain foods are only eaten in certain areas. Some milk is used, and ~~quite~~ quite a lot of powdered milk by the more prosperous and more educated - mainly for their infants. Wild honey is collected, and sugar cane is chewed. Sesame seeds are sometimes ~~for~~ grown for their oil, or for use as a savoury (mainly by Indians). Insects are not generally eaten but are popular in some areas.



APPENDIX V.

*Reprinted from*  
TRANSACTIONS OF THE ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE.  
Vol. 56. No. 5. p. 438, 1962.

WILD YAM (*Dioscorea* sp.) POISONING IN NYASALAND

SIR,—Partial failure of the crops in parts of Nyasaland this year may explain experiments in eating unusual foods. I was recently involved in the effects of one such experiment.

On 30th May, 1962, about noon, six African villagers, after an argument about its edibility, dined off a wild yam which one of them had dug up. A local Medical Aide who was present "doubted," and therefore did not eat.

Shortly afterwards the six people all became unwell, and vomited, which the Medical Aide encouraged by giving them salt water to drink and by sticking his finger down their throats. Most of them vomited repeatedly on to the ground.

A number of ducks and hens came and gobbled up the vomit. The ducks are reported to have vomited in turn. They survived. The hens did not vomit, and over 50 are reported to have died.

On 31st May I was informed, visited the village, and saw some of the patients—and a pile of about 12 dead hens outside one of their houses. A boy about four years old, a young woman, an old woman, and an adult man, were admitted to Malindi Hospital. Two others, whom I did not see, were treated as out-patients.

The four patients admitted all complained of abdominal pain, and "dizziness." All appeared anxious, had subnormal temperatures (95° to 97°F. in the axilla), had rapid weak pulses and had very active bowel sounds. They were treated by bed rest, warmth, magnesium sulphate solution, followed by fluids, orally, and sedatives.

On 1st June all had purged, and were in much better general condition. By 3rd June all were ready to go home, and three did so, but the old woman suddenly died, complaining of pain in her chest.

I suspected that she had died of a myocardial infarction, brought about by the hypotension which the poison had induced, but her relatives did not permit a postmortem examination.

From my description of the tubers, the yam has been identified by Dr. Bernard Steele of the Nyasaland Agricultural Department, to whom my thanks are due, as being of the genus *Dioscorea*. The species cannot be identified without an intact plant, which is not at present available, but is likely to be *Dioscorea bulbifera* L. Local names for the plant are *mandegele* (Chinyanja), and *chituungula*, *sangasi* or *mtuo* (Chiyao).

The remark of a local European on hearing of the outcome—"So the old woman was guilty after all!"—revealed a suspicion that the incident was in fact a trial by ordeal, but I have no reason to suppose that it was not an accident. I understand that in times of hunger such wild yams have been safely eaten, but that they require careful preparation first.

I am, etc.,  
DAVID STEVENSON.

P.O. Box 54,  
Fort Johnston,  
Nyasaland.  
26th July, 1962.



APPENDIX VI.

## RECENT INFORMATION

"The Times", of Blantyre, 2nd June 1964, gave some details of a five year development plan for Malawi, announced by the government. £32,837,000 was to be spent, in the period 1964-69, under the plan. Of this, £2,331,000 was to be spent on health, including an increase of hospital beds by 75% by 1969 and the opening of a nurses training school in Blantyre-Limbe to train to S.R.N. level. The plan incorporates a sewerage scheme for Blantyre-Limbe. £75,000 was to be spent on a census, £38,000 on market surveys and £126,000 on Blantyre airport. Of the spending on education 63% was to be on secondary schools. Percentages of the total to be spent in various fields were given as :

Health	7.1%
Agriculture and fisheries	7.8
Communications	26.7 (Roads etc.)
Education	24.3
Housing	2.5
Social Development	0.4
Veterinary	0.8
Water and sanitation	2.9
Commerce and industry	4.9
Forestry and game	5.7
Government buildings	3.9
Lands and surveys	2.3
Miscellaneous	8.2
Posts and telecommunications	2.5

"The Times" Independence Souvenir, July 1964, gave the total cost of the plan as £44 million, again with £2,331,000 for health. ("The Times" of 12th June 1964 mentioned a 6 year development plan in Kenya - estimated population in 1961: 7,287,000 - to cost £317 million).



### Rates of pay.

The legal minimum wage, for an adult man, in 1963 was 1/10d per day for an 8 hour day in the country districts, and around 3/- per day in the towns. The legal minimum wage was the standard wage for unskilled labour. The figure was rather lower for women and juveniles. Even the rise to these figures forced employers to cut down on the number of their employees. Griff Jones (1964) gives for comparison the wages of unskilled labourers in various countries :

United States of America	10/- per hour
Britain	5/- per hour
Pakistan	6d per hour
Nyasaland (Malawi)	3d per hour

### British Aid.

"The Times" of Blantyre, of 10th July 1964, reported that an assurance of continued British assistance for Malawi's development programme was given by Britain's Parliamentary Under-Secretary of State for Commonwealth Relations, Mr Richard Hornby, when he spoke at the State Luncheon in Blantyre during the independence celebrations. Some £3,000,000 of assistance was announced the other day, he said, "And I can assure you that we on our part are anxious to play our full part in any contributions which Malawi may decide to seek outside her own boundaries." Up to £5 million will be spent by the British government this year to cover the deficit on Malawi's budget.

### United States Aid.

The same newspaper issue reported that the U.S. Agency for International Development (A.I.D.) will provide £20,000 worth of American manufactured equipment for the new Polytechnic Institute which is already being financed to the extent of £525,000 by the agency. America is also to give radio and mobile health equipment, including two medium wave broadcasting transmitters for Blantyre and Lilongwe and a mobile X-ray and medical clinic. The National Geographic Magazine for September



1964 mentioned the presence of 140 Peace Corps Volunteers in Malawi. ("The Times" of 14th August 1964 reported that 27 British Voluntary Service Overseas volunteers, three of them nurses, were due to arrive later this year. V.S.O.s normally serve for a year, Peace Corps volunteers for two years).

#### United Nations Aid.

"The Times", of Blantyre, of 23rd October 1964, announcing the signature - due on 24th October - of an agreement with the United Nations Technical Assistance Board, stated that the U.N. have provided an economic adviser to the Prime Minister's Office. A public administration training expert has been attached to the government. A low-cost housing adviser is attached to the Malawi Housing Corporation. An expert on the rehabilitation of handicapped persons is also in the country. Other experts and advisers from the U.N. were : a home economist (attached to the Ministry of Community and Social Development), a fisheries development adviser, a fish processing technician, an education planner for primary education and a meteorologist. Two experts in industrial development were expected shortly. Before independence the total aid envisaged was approximately £85,000. With independence, the programme for 1965-66 has been allocated provisionally at about £420,000. "...if the Government comes up with some urgent and justifiable scheme, additional funds can be obtained through the various United Nations agencies" said Mr Kouros Satrap, the U.N. representative in Malawi.

#### Hospital fees.

"The Times", of Blantyre, for 26th June 1964 announced that as from 6th July Outpatients would pay 3d per treatment (by postage stamp). There would be a 10/- charge for maternity (delivery) - 30/- at Blantyre, Lilongwe and Zomba hospitals. Exempt from the charges would be children at schools, tax exempt men, in-patients, poor people and the old and enfeebled. Free treatment would be given for bilharziasis, venereal diseases, tuberculosis, smallpox and leprosy.



### Health propaganda.

"Malawi News" for 17th July 1964 reported that at Dowa five councillors had been elected to a Health Committee with duties to encourage people in the villages to attend hospitals, and to give advice to people to keep their houses and surroundings clean and tidy and to avoid disease.

"Malawi News" for 23rd October 1964 reported that Ministry of Health exhibits loaned to Blantyre-Limbe Municipality for a recent "Health Week" will be formed into a touring unit for exhibition throughout the country. "It is intended to extend the scope of the exhibits to cover all aspects of health in Malawi, and to show the way the people can participate in the defeat of disease."

### New Minister of Health.

According to "Malawi News", 27th October 1964, Mr G.W. Kuntumanji, Southern Region Minister, has been appointed Minister of Health as from 24th October 1964. The appointment was made by Dr Banda, the Prime Minister (who formerly included the Ministry of Health among his own portfolios).



APPENDIX VII.

## REFERENCES AND SOURCES OF INFORMATION

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