

Leprosy in the Luapula Valley, Zambia: History, Beliefs, Prevalence and Control

P. GLYN GRIFFITHS, M.C., B.SC., M.B., CH.B., M.R.C.P.(London), M.R.C.P.(Glasgow)
(Medical Superintendent, Liteta Leprosarium and Luapula Leprosy Settlement, and Leprologist, Republic of Zambia)

The Luapula Valley

The Luapula River drains the swamplands of Lake Bangweulu on the Central African Plateau (Map 2), and, sweeping round to the North, flows into Lake Mweru, which at Pweto empties itself into the River Luvua, a tributary of the great Congo River system.

This paper considers leprosy amongst the people living along the East bank of the Luapula River for the sixty-odd miles between Johnston Falls and the town of chief Kazembe of the Lunda (Map 1).

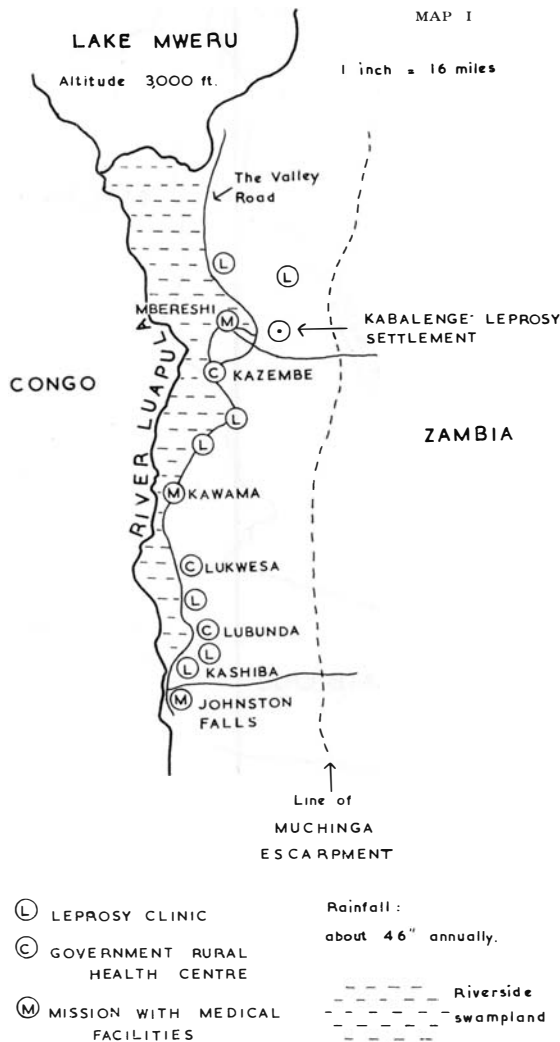
Population

In this small area there is, for Zambia, an unusually high concentration of inhabitants. The Census taken in 1963, and the Registration of electors in the same year, offer accurate population figures, and there are some 21,000 persons over 21 years of age living in the area. This is a very different state of affairs from that prevailing in the greater part of the rural areas of Zambia; for the most part the Zambian rural population is very sparsely distributed, at only about eight per square mile, all ages. In the 600 square miles under consideration here, the adult population density is 3.5 per square mile! In fact, the population is much more concentrated than this suggests, as the people inhabit large villages, of a median range of 20 to 30 houses, ranging up to 145 houses, and in the case of Kazembe's town, over 1,000. Only about an eighth of the villages lie off the main swamp-margin road (Cunnison, 1959).

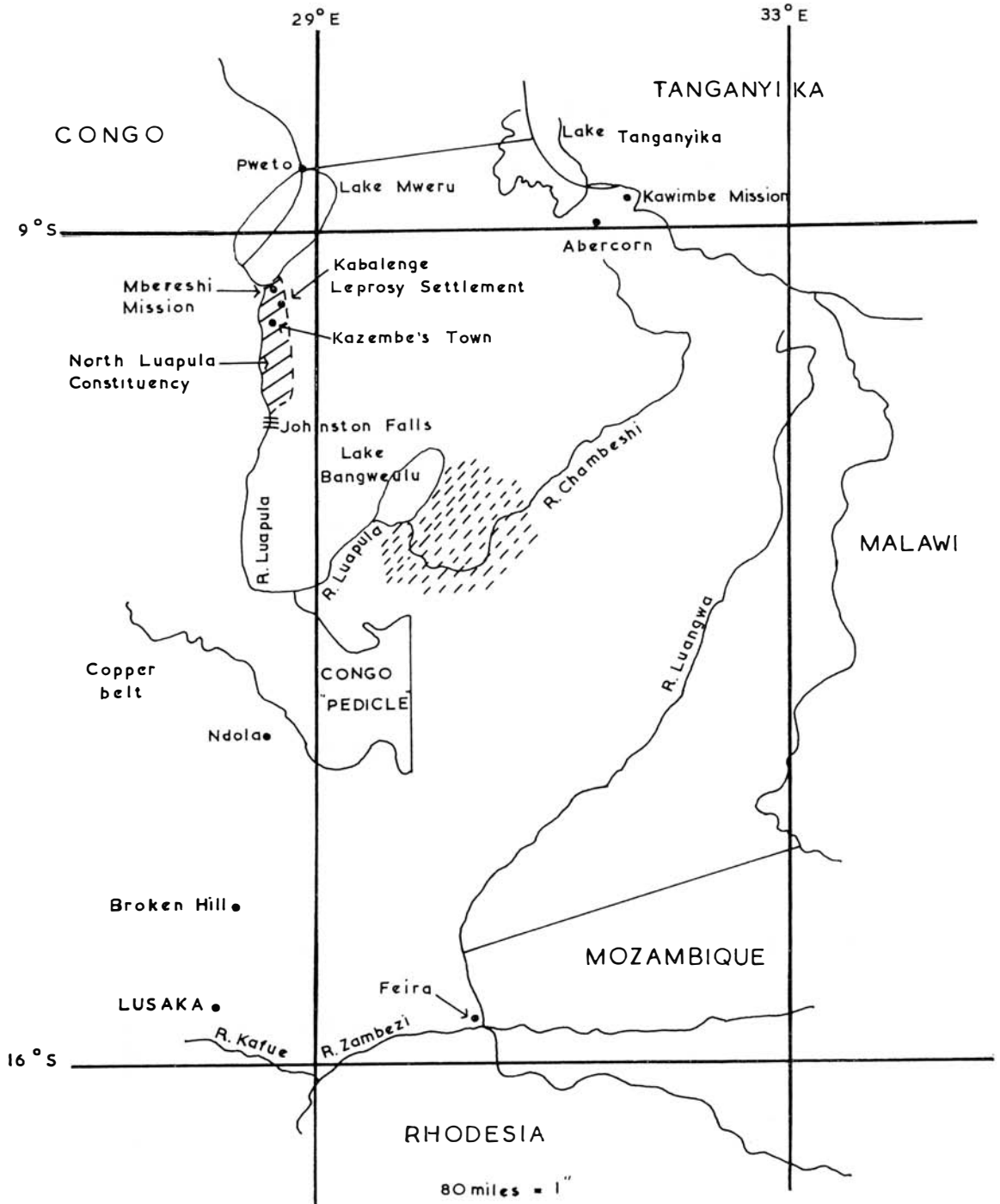
As one travels along this road, which links Kazembe's town with Johnston Falls, village succeeds village along the road side, so that it is often difficult to know where one village ends and the next begins.

The North Luapula constituency is identical with the area chosen for this investigation; thus it was possible to check the register of voters against the Census figures. Practically every single person over the age of 21 years registered for the election (which was the first under universal suffrage), so it is believed that the 1963 population figures used here are remarkably accurate.

Population growth has been very rapid—from 27,154 in 1941 to over 51,000 in 1963 (all ages).



MAP 2



In 1963 there were 101 persons under 21 years of age for every 70 over that age.

About 25 per cent of the adult males are away from the valley at any one time, as they go in large numbers to the Copperbelt to seek work. Many stay away from their villages for very many years; some leave the valley for only a year or two at a time.

The people are of the 'Luapula Type', Kazembe Lunda (or Luunda), and Chishinga, who are groups of the Central Bantu, Northern Division (Mitchell, 1960).

Historical Background

The date of the establishment of chief Kazembe's overlordship in the Luapula Valley is known fairly accurately. Lacerda visited Kazembe's town in 1798, and recorded that the dynasty had been there for about fifty years at that time (Cunnison, 1959).

The Lunda chief Kazembe and his followers had come to the Luapula from the great Mwata Yamvo kingdom in the middle Congo; they conquered peoples such as the Bwile and Shila whom they found living in the valley.

The Congo (Leopoldville), from which Kazembe and his people came, has a high prevalence of leprosy. There were 275,000 cases under treatment in the Congo in 1956, or 20 per 1,000 of the population (WHO, 1959).

In the fascinating *Report on Leprosy* produced by the Royal College of Physicians of London in 1867, Gavin Milroy, Secretary of the College's Leprosy Committee, contributed a 'Sketch of the Geographical Distribution of Leprosy'. (It was this report which discredited entirely the belief that leprosy was contagious, and was regarded by the Editor of *The Lancet* (1867) as 'the authority' on leprosy of the time!) Milroy writes:

'The chief seats of leprosy in recent times continue to be the same regions of Africa and Asia where it was originally seen, and where it was known to have been most common in remote ages.'

He mentions that slaves brought to the West Coast of Africa from the interior 'are frequently affected with the disease'.

There is no doubt that slaves were taken from the Luapula Valley to the West Coast; many of these slaves were obtained by Portuguese and Arab slave-traders with the aid of Kazembe

(Cunnison, 1959), and some of those slaves to whom Milroy refers may possibly have come from the Luapula, therefore.

In the same Report, Mr Bradshaw, Colonial Surgeon in Sierra Leone, commented that leprosy was particularly common in 'natives who come from the Niger and Congo neighbourhoods'.

The origins of leprosy remain a mystery; Rogers (1924) connected the high prevalence rates in Central Africa to an Egyptian record of 1350 B.C. of leprosy among negro slaves from the Sudan and Dafur. But Feeny (1964) considers that early 'knowledge' of leprosy in Africa was probably 'supposition'. Møller-Christenson (1963) examined many thousands of mummies and skeletons from ancient Egypt and Palestine, and found no evidence of leprosy earlier than about A.D. 500.

Traditional Beliefs about Leprosy

That leprosy is, in fact, a disease long known amongst the people of the Luapula Valley appears to be confirmed by the many words in their language which they use to describe it. (Lunda, which is akin to Bemba, is the language mostly in use.)

Thus there is a word for leprosy in general: 'tembwe', almost a euphemism; this word covers all manifestations of the disease. A single patch of diseased skin caused by leprosy is 'chibashi'. Skin thickening due to leprosy is 'mamombo'; the nodular form is 'mapumba'; the blistering often noticed early in the course of the disease is 'mavovela' or 'matutulu'. 'Kaswandala' describes the patient with only one or a few skin patches, with or without coincident loss of the fingers. 'Mamombe' rather more definitely defines as leprosy the skin patches, and 'mumba' identifies lepromatous skin nodules, with the connotation (associated with others of these disease-names) that it is a disease which leads inevitably to gross deformity through the loss of fingers or toes.

There is a proverbial saying: 'Nsala ni mamombo tayalila apei' . . . hunger is like leprosy, it doesn't kill quickly'.

There is a considerable volume of folk-lore and traditional belief associated with the disease:

The disease was often believed to be a *punishment* (how reminiscent of Mediaeval Europe!):

(a) It might be caused by theft, especially by stealing an animal or a fish taken from someone else's trap. The owner of the trap would put a special 'medicine' into the trap to cause leprosy in the thief.

(b) Or it could be caused by adultery; the aggrieved husband could, by arrangement with a worker-of-spells, cause leprosy to attack the offender.

(c) Eating the flesh of certain animals, especially the hippopotamus, caused leprosy in some people. This was sometimes thought to be due to the spirit of a person dying with leprosy having taken up residence in the hippo. (This belief spreads as far South as to the Feira District on the Zambesi, where the Chikunda people live, and I have had patients from Feira who believed their leprosy was due to eating hippo.) Kazembe himself never ate any of the larger animals such as elephant, hippo, or eland, because they were his 'fellow-chiefs of the bush' (Cunnison, 1959).

Witchcraft was believed to be an important cause of leprosy, but was thought to be incurred sometimes by such foolish behaviour as insolence to an old and respected member of the community.

When someone with leprosy *died*, he was not buried but his body was covered in thick bark, and either thrown into a cave or pit, or put up into a tree in the way that a leopard stores his kill. Should anyone be foolish enough to bury the patient, the leprosy would pass to the gravedigger.

Eating guinea-fowl, bushbuck, bubble fish, any kind of red or scaleless fish (e.g. 'Sampa') makes leprosy worse. The disease being red in colour on the skin, red things as a whole tend to aggravate the leprosy.

The *symptomatology* of leprosy is well known to the rural people. Before the leprosy makes itself manifest on the skin, the patient suffers 'kunanuna' (formications), and 'kubaba' (itching without actually wanting to scratch). This is a very good description of prodromal symptoms often seen in leprosy. Patients from areas of high prevalence, such as the Luapula Valley, know the disease well, and to this day they speak of having suspected that they had leprosy when they had these prodromata, 'before the leprosy showed itself on my skin, when I felt it inside my body'.

Remedies used by the village herbalists (the 'shinganga') are many. For a localised patch (tuberculoid type) multiple scarification with the application of a caustic is commonly carried out; for more widespread types, such as the lepromatous type, lotions and also herbal potions are used. Often enough no actual 'practitioner' is called upon, as many of the older people know which kinds of herb, bark, etc., are usually used to make up these 'cures'.

Diagnosis of leprosy is usually very promptly made by the older people in a village community and is often made also by the 'shinganga' if someone goes for treatment with some ailment not yet knowing that he has leprosy. Surprisingly, rarely are the people wrong in their diagnosis. All too often I see patients who knew well that they had leprosy, but could not persuade the staff at hospital to accept the diagnosis! Many of the older generation of 'shingangas' (who, by the way, are very far from being 'witch-doctors') are very honest practitioners, and accept no fee in the event of their failing to effect a cure; some of them around the Liteta area send any new leprosy which they see direct to the Leprosarium for treatment! Some, again, distinguish between types of leprosy which they feel that they can treat successfully (e.g. one or two isolated patches only) and types which they know from experience will get worse under their treatment (e.g. nodular lepromatous disease). They maintain their reputation in the treatment of leprosy from those cases of tuberculoid disease which are probably in any event self-healing, as so often in this type their local scarification of the skin is followed by apparent cure.

Isolation: there was, in addition to the beliefs mentioned above, a generally accepted notion of the contagiousness of leprosy. Old people tell me that, around the turn of the century, segregation was quite rigidly practised when someone was obviously severely attacked by leprosy (this usually meant that the patient had gross tissue loss of hands or feet, and often enough such a patient was probably not infectious at all). The sufferer had to live in a hut by himself, far from the village, and to its West (the prevailing wind being from the East). Anyone kind enough to take food to the patient should be a spinster or a widow, and, when taking the food, should walk backwards, so as

not to see either the patient or his hut. The food used to be left halfway between the village outskirts and the 'isolation hut'. Small wonder that, under these conditions, people isolated for leprosy often died of hunger. They were never slain, because it was believed that the man who killed someone with leprosy would himself contract the disease.

Many of the beliefs recounted above are still to be found amongst the older generation; but the segregation system was discarded around 1915 to 1920 with the increasing influence of the Missions and of the Central Government.

Amongst some of the younger generations, a depressing apathy succeeded the old beliefs, and many came to think of leprosy as an act of fate, for which nothing much could be done either in the way of treatment or of control.

In 1915 the London Missionary Society formed a small 'isolation camp' at Mbereshi, near Kazembe's town. Its modern successor is the Luapula Leprosy Settlement at Kabalenge, near Kawambwa, on the escarpment just above the valley itself, which was started by Mr W. Densham, a B.L.R.A. worker, as a joint government and mission enterprise in 1944. By the end of 1963 nearly 6,500 patients had been admitted there. (Many of those admitted came from other Districts and Provinces of Zambia.)

This change in the approach to leprosy is reminiscent of Latapi (quoted by Frenken, 1963):

'He who threw stones at the leprosy sufferer, making him flee, did a primitive and barbaric sanitary work. But the first man who took him in, nursed him, and looked after him, was a precursor of our Christian Society.' It was in fact the Christian Missions which first undertook the care and isolation of leprosy in Zambia.

Early Historical References to Leprosy in Zambia

The earliest record of leprosy in Zambia which I have been able to find is by Livingstone (quoted in Gelfand, 1957). Amongst patients seen by Livingstone at Naliele (Barotseland) was a man 'seized by a species of leprosy called Mbingwa which soon produces ankylosis of the joints'. As all the medicines he had tried from the local practitioners had failed to cure him, this man attempted to end his life by thrusting a spear into the hollow above his collar bone (Gelfand, 1957). (The word 'Mbingwa' is still the one

used most widely for leprosy by the peoples of Barotseland).

In 1869, Livingstone recorded seeing much leprosy on his journey from Ujiji into the Congo (Gelfand, 1957); in that journey he was travelling through country not very far from the Luapula.

Sekeletu, son of Sebituane of the Makololo, then the rulers of Barotseland, was said to have been 'carried off by leprosy' (Gelfand, 1961), though Livingstone had diagnosed pemphigus when he examined him.

In 1893 Dr C. B. Mather, of the London Missionary Society, founded the first leprosy settlement in Zambia, at Kawimbe, near Lake Tanganyika. Dr Mather wrote in a report to London:

'I rejoice to chronicle the building and occupation of a small hamlet, outside the village, for outcasts suffering from a disease resembling leprosy. There are seven houses in it, and some twenty people living in them at present'. (Gelfand, 1961).

There is to this day a very well run leprosy settlement run by the Mission at Kawimbe.

In 1908, F. W. Worthington, Secretary of Native Affairs with the Chartered Company, reported that in the 'Batoka district' (part of the Southern Province of Zambia) leprosy had an incidence of 21.5 per 1,000, and in the Sesheke District of Barotseland 25.4 per 1,000 (Gelfand, 1961).

Modern Scientific Reports on Leprosy in Zambia

Cochrane visited the country in 1932, and stated 'it is known that certain areas of this territory, e.g. Barotseland, are centres of a very high incidence of leprosy. If, as there appears to be, about 1 per cent of the population around Livingstone either suffering from leprosy or its effects, the percentage in Barotseland must be staggering'. (Cochrane, 1932). (He was indeed correct - in July 1964, 6,331 persons were registered on the Barotseland Leprosy Register out of an adult population of 187,400 - or 34 per 1,000).

In 1940 Muir visited Zambia. He quotes 'official figures' (based upon tax exemption statistics) for the year 1934. These varied from 13.1 per 1,000 in Barotseland to 0.73 per 1,000 in the Eastern Province, with a total of 6,748

leprosy patients in an estimated population of 1,334,465, or 5.2 per 1,000 (Muir 1940). These figures only took into account those persons deemed unfit to work to collect their tax money, and this decision was made by administrative officers, whose estimation of disability probably varied very much. When Muir visited this country, he noted that the whole number of patients provided for by institutions was 'not more than two hundred and fifty'. This was a far cry from today's situation. In December, 1963, there were 15,300 leprosy patients actually under treatment in the whole of Zambia, 4,500 odd of these being in nine Government and 21 Mission Leprosy Settlements, the remainder attending at some 350 treatment centres as out-patients.

In 1949, Sister Elsie Baker, of the London Missionary Society's Leprosy Settlement at Kawimbe (founded in 1893, *vide supra*), carried out a leprosy survey along the Southern shore of Lake Tanganyika in the Abercorn District. She examined 4,670 people, and found that 75 (16 per 1,000) had leprosy. She reported, however, that there was 'a gross concealment of cases' in the area. (Baker, 1949).

During April to June 1950 the first major leprosy survey in Zambia was carried out by Ross Innes. In a sampling survey, he examined 27,915 persons, and found an average prevalence of 12.6 per 1,000. He found prevalence to be much the highest in the Luapula Valley; but he was not able to extend his survey beyond the Northern, Eastern, and Southern Provinces, and so did not visit Barotseland. Only 18 per cent of the new leprosy which he diagnosed was amongst children. (By 1949 Ross Innes found that there were 1,714 patients isolated in eight leprosaria, and that 295 new cases were reported during that year). (Ross Innes, 1950 and 1951, and Pizzi, 1952.)

In the North Luapula Constituency of the Luapula Valley Ross Innes found prevalence rates as follows:

Chief Kazembe's area: 25 per 1,000 in Musanda sub-area
 17.3 per 1,000 in Mwan-sabombwe area
 Chief Lukwesa's area: 25.6 per 1,000
 Chief Lubunda's area: 20.6 per 1,000
 Chief Kashiba's area: 19.1 per 1,000

110 cases of leprosy were found amongst 5,319 persons examined, or 20.7 per 1,000, in the whole of this Valley area (figures abstracted from Ross Innes, 1950).

In addition, there were many patients from the areas of these four chiefs already under treatment at the Kabalenge Leprosy Settlement. Records for that period are incomplete, but I have been able to trace 56 adult admissions from the area to the Settlement, all of whom were in-patients at the time of Ross Innes' survey. (This gives a figure of half as much again for the prevalence of the disease, if one ignores the fact that Ross Innes was able to examine only 5,000 odd of the more than 30,000 persons of all ages in the area in the year of the survey.)

Ross Innes concluded that the picture was of 'a moderately severe, but widespread leprosy of ancient origin, which is nowadays slowly but surely increasing'.

He made a number of detailed practical recommendations to the then Director of Medical Services, including the following:

- (1) The purchase and free issue of the Sulphone drugs.
- (2) The appointment of a territorial leprologist.
- (3) The strengthening, encouragement and enlargement of the regional leprosaria.
- (4) The establishment of a new 'central' leprosarium.
- (5) The avoidance of compulsion and rigid repressive legislation in leprosy.
- (6) The development of the 'outward' look in all existing and future leprosaria.

In December 1952, Cochrane visited Zambia for the second time, and he fully supported the policy advised by Ross Innes.

It is gratifying to be able to report that all six of Ross Innes' recommendations have been carried out; though the sixth has only been followed through by certain of the leprosaria in the territory (notably Chitokoloki, Luampa, Fiwila, Kawimbe, Chikankata, Liteta, and, as will be related here, most notably from the Luapula Leprosy Settlement, Kabalenge, Kawambwa).

J. T. Worsfold (1957), working in the North-Western Province of Zambia, found a prevalence of 11.85 per 1,000 in a most detailed intrusive survey covering 20,148 people in the Isalovale District. In 1958 Worsfold reported a decline in

leprosy in the same area, and he concluded that this decline had begun before the introduction of sulphone therapy.

Garrod's Campaign in the Luapula Valley

(This rather odd sub-title may remind the reader of 'Jeb Stuart in the Shenandoah Valley', and it had something in common with that famous cavalry campaign, being hard-hitting, energetic, and enthusiastic, but with much longer lasting and more fruitful results than the short whirlwind campaign of the secessionist general.)

In February 1954 Dr J. M. B. Garrod (later Director of the East African Leprosy Research Centre at Alupe) took up duties at the Luapula Leprosy Settlement, Kabalenge, as its first Medical Superintendent, and as the territory's first leprologist.

Prior to his arrival Mr L. W. Corbridge had been lay Superintendent of the Settlement since 1946. He had been trained as a B.L.R.A. worker by A. B. MacDonald in Itu, Nigeria, and had already laid the ground for an 'outward looking' approach to the leprosy problem in the valley. Several small leprosy clinics had been set up along the valley road for out-patient treatment of patients whose treatment had been stabilised at the main settlement at Kabalenge, where a male nurse Mr Spengeler had been added to the staff.

The local authorities (the chiefs and their councillors) were persuaded to construct, at no cost to the Government Medical Department, seven clinics along the valley floor in the most densely populated areas which had no Government or Mission general medical clinic. In addition, the local authorities agreed to build houses for dressers seconded from the Leprosy Settlement to man these clinics. These 'Leprosy Clinics' were additional to the three Mission Medical treatment centres (Mbereshi, Kawama, and Johnston Falls) and the three Government Rural Health Clinics (at the towns of Chiefs Kazembe, Lukwesa and Lubunda) already in existence (Map 2).

Thus, in addition to the 'parent' Settlement at Kabalenge, there were 13 treatment centres along the sixty mile strip of valley bottom where there had been shown to be (by Ross Innes) such a high prevalence of leprosy.

The dressers who manned the leprosy clinics were trained in the basic principles of diagnosis and treatment of leprosy at the Kabalenge Settlement before being posted to their new stations. Each dresser spent two days in each week giving out Dapsone tablets to the patients for whom he was responsible. (Injectable 'Avlosulfon' given once every two or four weeks is now used instead). During the remainder of the week, the dressers visited the villages in their area on foot or by bicycle, examining contacts, seeking new cases, and following up any patients who had failed to attend regularly for treatment. Each of the treatment centres was visited at intervals of not more than three months by staff from the Kabalenge Settlement; at each of these visits the patients at the out-patient treatment centres were clinically reviewed, and newly discovered patients examined. A close liaison was maintained with the local authorities, particularly with regard to any patients who defaulted from treatment; and the respect in which the Officers of the chiefs was held was sufficient, without invoking any laws, to persuade most defaulting patients to return to regular treatment.

This system has been continued ever since 1954, and attendance at the clinics is still excellent, thanks to the co-operation of the local authorities.

The Results of the Campaign

The projected eradication campaign by B.L.R.A. to be carried out in Malawi in the near future, makes this an appropriate time to offer the results of this relatively simple campaign in an area of high leprosy prevalence.

TABLE I

North Luapula Constituency, Kawambwa District, Zambia
(i.e. the areas of Chiefs Kazembe, Lukwesa, Lubunda and Kashiba)

Adult population, 1963:	21,000
Total population, 1963:	51,000
Total adults treated for leprosy, 1953-1963:	1,815
Prevalence of leprosy:	86 per 1,000 adults 36 per 1,000 all ages

TABLE II
New Cases of Leprosy attending for treatment for the first time: 1953-1963 (adults)

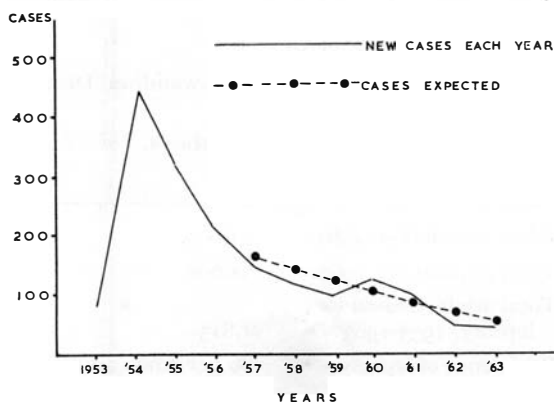
1953:	88	<i>Totals for the eleven year period from each chief's area:</i>	
1954:	459*		
1955:	323		
1956:	203	Kazembe:	525
1957:	164	Lukwesa:	368
1958:	116	Lubunda:	505
1959:	100	Kashiba:	417
1960:	123		
1961:	108		1,815
1962:	71		
1963:	60		
Total:	1,815		

*Since 1954, when the campaign was started, and in which year nearly one quarter of all the treated cases were first brought under treatment, there has been an annual reduction in the number of new cases found.

From 1956 on the annual reduction bears a remarkably close resemblance to the 15 per cent annual decrease reported by Browne (1962) in Eastern Nigeria, where a similar campaign has been under way for a long time. Table Three illustrates this trend.

TABLE III
Annual Rates, new Leprosy, Luapula North
New Cases Expected new cases at a reduction by 15% annually

1956:	203	
1957:	164	170
1958:	116	145
1959:	100	123
1960:	123	105
1961:	108	90
1962:	71	77
1963:	60	66



To show the numbers of new cases of leprosy brought under treatment annually, and to compare these figures with those which would be expected if there were an annual 15 per cent decrease.

Tables one to three and the accompanying graph show the effect of following the policies advised by Ross Innes and Cochrane. In particular, both had advised that leprosaria should be 'outward looking', extending their services into the district around, and not just waiting for patients to present themselves at the leprosarium for treatment. Although there had been a leprosy settlement in the District (first at Kawimbe from 1915, and then at Kabalenge from 1943) for very many years, the effect of setting up 'satellite' out-patients clinics manned by dressers trained in leprosy work can be seen in the sudden jump of new cases from 88 in 1953 to 459 in 1954.

Patients found on first examination to have positive smears were retained as in-patients at Kabalenge until negative; but all those bacillary negative and deemed suitable for out-patient treatment were treated *ab initio* at the valley clinics, or were given a short period of 'stabilisation' of their treatment in Kabalenge Settlement, and then transferred to out-patient treatment at their nearest valley clinic.

Routine methods of treatment were used, Dapsone alone being available at first, but Thiacetazone, Thiambutosine, Solapsone, Ditophal, and I.N.H., being introduced as indicated during the later years of the campaign.

Treatment for leprosy, as throughout Zambia, is free of charge.

SUMMARY

A small but intensive campaign against leprosy in an area of high prevalence, carried out for ten years, is described. To serve a population of 51,000 (of whom 21,000 were adults), there was one 'parent' Leprosy Settlement, and there were 13 out-patient treatment centres. Seven of these latter were manned by dressers who regularly visited the villages in their area as well as carrying out routine out-patient treatment.

Figures are given showing a steady decrease in new incidence of leprosy in the area annually, since the beginning of the campaign (1954).

86 per 1,000 of the adult population have been treated for leprosy between 1953 and 1963. Annual incidence rates for the years 1962 and 1963 have been only about 3 per 1,000 adults.

Traditional beliefs in the area are described, and what little can be traced about the history of leprosy in Zambia is set forth.

ACKNOWLEDGEMENTS

For information on the beliefs and customs of the people, I am grateful to Mr William Kawandami, now retired, and until recently the head artisan at Kabalenge Leprosy Settlement; and to Senior Medical Assistant Mr A. D. Musopelo and Medical Assistant Mr C. Mapulanga.

For records from 1953 to 1961, I have used the clinical notes and admission books maintained under the supervision of Dr J. M. B. Garrod, (1954-1956), Dr H. Jocelyn Smyly (1957-1958), Dr E. J. Currant (1959-1961), and Mr L. W. Corbridge, (who 'held the fort' as Superintendent during periods when there was no Leprologist).

To the Royal College of Physicians, London and the Royal Society of Tropical Medicine and Hygiene I am indebted for much help with reprints and photostat copies of articles on leprosy. I am especially grateful to Mr L. M. Payne, Librarian of the Royal College of Physicians, for a copy of the '1867 Report' and for much other contemporary material.

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