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Age structure in urban Africans in Lourenco Marques

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I hereby declare that this
is my own work and has not
been submitted previously
at any other university.

Antony Kung

For Professor Joseph Gillman
who instigated this research
and gave it inspiration.

Age structure in urban Africans in Lourenco Marques

by

Hilary Flegg

Thesis presented in fulfilment of requirements for the Degree of Master of Arts at the University of the Witwatersrand, Johannesburg.

July, 1961.

Thesis

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AGE STRUCTURE OF URBAN AFRICANS IN LOURENCO MARQUES

INTRODUCTION

This is a study of an African population that lives in, and around, the city of Lourenco Marques in Mozambique. These Portuguese East Africans were the subject of a Cancer Rate Survey which was commenced in 1956. The present study was undertaken in 1957, to ascertain demographic and other data which were urgently needed as a basis for the medical statistics of the Cancer Research.

The demographic survey was a research project in which the disciplines of statistics and sociology were successfully combined to plan the research and to solve the problems involved in carrying it out. This was essentially a collaborative study in which major problems were shared by statistician and social scientist, and minor ones were thus avoided. The writer went into the field to train personnel and conduct the survey. The statistical adviser visited the area to be surveyed and thence acted in an advisory capacity as regards statistical details, designing the sampling scheme and carrying

out the statistical analysis of the data obtained.

The method by which this was done has been described in a joint publication by the writer and the statistical consultant to the Cancer Research Unit in Lourenco Marques. (1) The material which is presented here deals with the sociological aspects of the research, the statistical data which were the end result and the method by which this result was obtained. Statistical techniques used in the survey were the contribution of the statistical advisor. They are, therefore, not discussed in detail but only insofar as they relate directly to the sociological data and the method of enquiry. It is felt by the writer, however, that the proficiency of these techniques has undoubtedly invested the sociological data with a significance they would otherwise have lacked. It is hoped that the care taken in the method of enquiry has, in turn, enhanced the value of the statistical results.

PART I

OBJECTIVES AND METHOD

A Cancer Rate Survey requires that over a definite period of time all cancers in the whole population of a definitely defined area shall be collected. The characteristics of the population-at-risk to cancer must be known, especially the age and sex distribution, so that the number of cancers expected in each age and sex group can be calculated. The pattern of cancer may then be compared with patterns for populations in other parts of the world.

In countries where the majority of the population is literate, census figures are usually accepted as a basis for calculation of medical statistics. In underdeveloped populations such figures are suspect, however, because they are very often derived by unreliable methods. If it is possible to obtain independent estimates by scientific methods, this is obviously advantageous especially for medical research.

In Lourenco Marques no previous investigation, sociological or otherwise, had been made in relation to the

indigenous population. It was known that a steady influx of rural dwellers to the urban area had occurred. A recent delimitation of magisterial districts in Mozambique, together with a drift of sections of the African population away from certain districts, and towards others, where industries were developing had, however, caused official statistics - nearly ten years old - to be even more inadequate than census figures usually are as a source of the basic information required.

It was decided, therefore, that a sample survey of the African urban population should be carried out with a view to:-

1) Defining a specific survey area encompassing the city and environs of Lourenco Marques;

2) estimating as accurately as possible, the number and the age and sex structure of the African population of the defined area;

3) establishing certain basic facts regarding this population - (the "population-at-risk" to cancer) - in order to describe broadly its environmental background.

An important objective of the sample survey was that a framework for social research should be set up. It was not expected that a comprehensive study of the socio-economic background of the population could be achieved in what was intended as a preliminary survey. Resources of time, money and personnel were strictly limited and were to be used to open up the survey area and to obtain such data as were required immediately. It was proposed that a more intensive investigation should follow the present survey at a later stage when aetiological studies in cancer would be carried out.

The survey was preceded by careful preliminary investigation in which a frame for sampling was sought for a population that lived scattered about in primitive dwellings on the city's outskirts. One of the basic problems in Lourenco Marques was the complete lack of any precise information regarding the population, its origin, its composition and its duration of residence in the urban area. In Mozambique social studies amongst urban Africans have not yet been done, although it should be mentioned that there, as elsewhere in Africa, the necessity for them has, to some extent, been recog-

nised. In 1957 it was decided in Lisbon to establish the "Missão para o estudo da atracção das grandes cidades e do bem-estar rural no ultramar" (a mission for the study of the attraction of large cities and the welfare of overseas rural areas).

Nevertheless, no published data concerning African urbanisation are yet available in Mozambique. The Cancer Research Unit was faced with a population of just over 100,000 Africans about whose way of life little was known beyond what was visible to the naked eye. The survey was intended, therefore, inter alia, to provide a suitable basis for enquiry into the environmental changes which have occurred with the urbanisation of tribal Africans and the effect this has had, in measurable terms, upon their health - particularly in relation to cancer.

The sample survey method using a standardised schedule in a single interview, was employed to obtain the basic data required for the Cancer Rate Survey. The limitations of such method in interpreting quantitative data were recognised, however. They were guarded against as far as possible by the extensive preliminary work of the survey, by careful observation, by checks on

all doubtful information and by reference to other sources of information e.g. Census Reports, Health Service and Administrative records, interviews with social workers at the Hospitals and clinics. Visits to rural and urban areas in other parts of Mozambique and four years of work in the Cancer Research Unit in Lourenco Marques have helped to correct many erroneous impressions which had been formed previously through lack of precise information.

THE POPULATION UNDER SURVEY

The population under survey is urban in that it is domiciled in an urban area. Although composed, to some extent, of migrant labourers this population has a core of permanently settled residents which appears to be growing. Yet the degree of urbanisation is difficult to determine. These Africans have drifted into the urban area in unorganised fashion and have not yet established themselves in well-defined communities. The tribal structure that existed in the rural areas no longer forms the basis of social organisation, but

sufficient of it remains to inhibit the emergence of neighbourhoods as known in Western society. An illustration of this is the way in which African urban dwellers in Lourenco Marques send for assistance in time of need, not to their neighbours, however near, but, in the traditional manner, to members of their families often some distance away.

Neighbourhood feeling grows tardily in a shifting population where title to land is negligible, and temporarily constructed houses may have to be moved when land is sold from under them. Yet the possibility of being able to shift about within the outskirts area and of being able to build another temporary house on yet another piece of rented land, lengthens the duration of residence in the urban area and places these Africans in a category of urban dwellers uncommon even in Southern Africa.

As in other parts of Africa, the Africans of Mozambique are undergoing simultaneously the processes of urbanisation, detribalisation and assimilation, and have adapted themselves to Western urban life with varying success. In the absence of any large scale industrial-

isation, they show, in general, a less marked advance towards Western culture than do African populations in industrial centres like Johannesburg in South Africa, or Salisbury in Southern Rhodesia. Nevertheless, all of these, including the Lourenco Marques population, are populations in transition whose members live, with rare exceptions, on the outskirts of ~~a~~ European controlled urban areasand on the outskirts, too, of so-called Western civilisation.

The degree of urbanisation of such African populations is very often exaggerated by non-African observers. Africans come and go, to and from, the urban areas and few are permanently urbanised as is evident from the data presented in Part IV of this study. Restrictions on social mobility and economic opportunity must play a retarding part in adaptation of Africans to urban life but a part which is probably diminished, for individuals, with time. With the settling down in urban areas of migrant labourers, new generations appear that have never lived elsewhere. These must be considered urban even if they are but incompletely absorbed by the urban community as a whole, and their fate in old age has not yet

been determined.

Clearly, it is necessary to enquire into the variety of factors that influence the patterns and the stresses of urban life for Africans. Such enquiry was not within the scope of this study but, as the sample survey was to lay the foundation for further research, it was felt that the probability of its being carried out at some future date, should be reflected in a discriminating assessment of known methods of social research to meet the needs of this new field of study. Western European textbook methods in sociological enquiry are, in many instances, unsuited to the field in Africa. There is an urgent need for social scientists to forge new and more specific tools for use in this relatively undeveloped territory.

An instance of this is to be found in terminology for residential strata in urban areas. Because of Western European connotations which attach to them, the terms "urban", "sub-urban" and "peri-urban" do not describe the inner, middle and outer zones in which the African population of Lourenco Marques resides. Nor can these Western terms be applied for comparative pur-

poses to African residential areas in South Africa or the Copperbelt townships of Rhodesia. Even the term "township" is not applicable in Lourenco Marques. The problem of terminology is met, therefore, in this survey, by a detailed description of the residential strata which are called inner, middle and outer zones. The middle and outer zones are on the outskirts of the built-up European area which is called the "city" or, as far as the African survey population is concerned, the inner zone. The term "European" applies here to persons of European origin whether, or not, they were born in Africa. "Western Culture" and "Western Civilisation" are used to describe the culture and civilisation of Europeans as defined above, although it is noted that for Europeans in Africa, these terms are not strictly applicable.

The African population is divided in the Tables of the population Estimates (I, II and III) into "urban" (inner zone) and "semi-urban" (middle and outer zones) for the purposes of the Cancer Rate Survey and to separate the migrant labourers from the more settled population on the outskirts of the city. As these tables have

already been published[1] it was felt that they should not be altered here.

Lourenco Marques. The City as an Urban Centre

Lourenco Marques is situated at latitude 26° on the East Coast of Africa in the most southern part of Mozambique, where it borders on Swaziland and on the Union of South Africa. It is the natural outlet to the sea for the Witwatersrand Goldfields in South Africa. This has governed its development as a port and as an urban centre since the middle of the nineteenth century. The major part of this development has taken place in the last 40 years. A hundred years ago the town was reported as consisting of "a miserable square of squalid looking houses"[2] and it emerged positively as a European-ised city only after the first world war. By 1930 its urban amenities included electricity, telephones, tarred roads and tram-cars.

The city lies in flat sandy country on the Estuary Espirito Santo (Delagoa Bay) where the Umbeluzi River reaches to the Indian Ocean. It has a boundary line some 5 kilometres from its city limits. This line

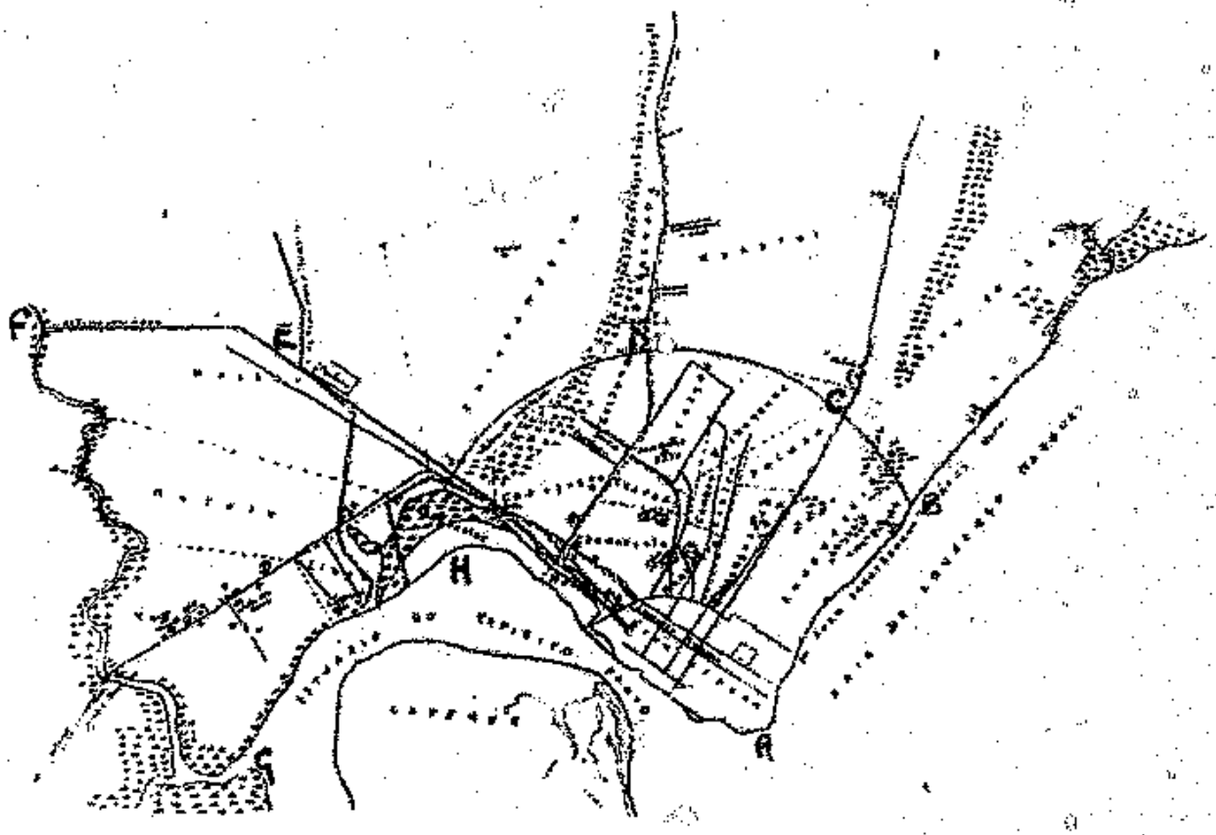

Fig. 1.

describes an arc from the East Coast sea front down to the estuary, and it encloses a clearly defined area of 56 sq.kms. marked ABCDH on the map (Fig.1) constituting the inner and middle zones in which live approximately 120,000 people, two-thirds of whom are native Africans.

Beyond the boundary line, at DH, (Fig.1) to the west of the city, has occurred the peri-urban development, up the navigable river mouth and along the lines of transportation (the road and railways) from the port to the Union of South Africa. This is the direction of present industrial and residential development which is gradually linking the small neighbouring dormitory villages of Matola and Machava to Lourenco Marques.

Peri-urban development has to date occurred almost entirely in this westerly direction. Eastern and Southern expansion are cut off by the sea and that to the North is only just beginning, with the building of small factories and workshops along the main road to the North of the Province (passing the point marked D in Fig. 1). Between this road and the sea coast (lying along AB, Fig.1) is a rural territory of undeveloped bush country sparsely inhabited, as can be seen clearly on

aerial photographs. This terrain, which is penetrated by a narrow railway travelling parallel to the main road, North, delimits the environs of the city at the line DGB (Fig.1). The nearest African settlement in that direction is at Marraquene (Vila Luisa) 30 kilometers north of Lourenco Marques.

The outer zone DEFGH (Fig.1) was at one time rural, but recent industrial development there has linked it to the city of Lourenco Marques and its inhabitants have become a part of the outskirts population of that centre. The density of the outer zone population is low in relation to that of the middle zone, with just over 20,000 Africans in 60 sq.km. who live and work amongst less than a tenth of that number of Europeans. The area in which this population lives is almost equal in size to the combined inner and middle zones. The three areas are clearly divided into territorial strata, but it should be noted that the definition of these strata as inner middle and outer zones has been used to facilitate the demarcation of population groups for sampling purposes and not to describe the type, or stage, of urban development in the various strata. That is to say, that the definition places the strata in order from the centre of

the city outwards. During the process of urban development, the core of the city has become the domain of that Europeanised section of the population which is officially called "civilised" in Portuguese territory. This section of the population consists of Europeans, Indians, Coloureds and Chinese, while a straggling, but ever increasing, African native population, officially called "uncivilized", has settled gradually, in unorganised fashion, outside of the built-up city centre (inner zone) in what will be called the middle and outer zones.

A description of the three zones is given here in order to show the more obvious differences between them as regards their residential situation and social composition.

The Inner Zone (City Area)

In this area live over 14,000 Africans who work for non-Africans as servants or labourers. They are almost exclusively migrant workers who leave their families in tribal homes and come, singly, to town to live in rooms, or other quarters, provided for them by their employers behind houses, small shops, hotels and boarding houses,

or in compounds such as those of the railways and harbours. Domestic servants, who are usually required to "live in", are rarely drawn from the population living on the outskirts of the town. A late dining hour coupled with a 9 p.m. curfew formerly imposed on the indigenous African population, made it difficult for daily workers to proceed after work to homes outside of the city area. However, because of the growing shortage of domestic labour and the raising of the 9 p.m. curfew, this situation is now beginning to alter and daily domestic workers are slowly becoming a feature of urban life. At present, this group of urban dwellers in the inner zone is widely different in age, sex and social composition from the two groups, living in the middle and outer zones on the city's outskirts, and it is obvious that it should be considered separately from them.

No difficulties were encountered in sampling the servant population because the central city area was compact and easy to traverse with the aid of a good map, showing numbered blocks and street names, and all Africans in the area could be interviewed on the premises of their employers.

At one time the inner zone was clearly divided from

the middle zone, where the majority of Africans live, but in recent years with steady urban development the two areas have become merged and the borderline between them is no longer well-defined. Figure 2 is part of a larger aerial photograph which shows the borderline area in one part of the town. This "borderline" has been drawn on the photograph to show the demarcation into inner and outer zones when the population was divided into residential strata.

On the borderline zone, all along the outskirts of the built-up city area, lives a polyglot population of mixed racial origin in which Africans are found in close proximity to permanently urbanised Indians, Chinese, Coloureds and Europeans. All African houses were included in the middle zone on the left in the photograph in Fig. 2, and all houses of other "racial" groups in the inner, or city zone, on the right. Houses in the inner zone, with very few exceptions, have one or more of the migrant African servant group "living-in" and working in them. They were included in the population of the inner zone. Although somewhat tedious, the separation of African from non-African houses was not difficult because the houses of the Africans are notice-



Fig. 2.

ably different in construction from those of their non-African neighbours, as will be shown when the fieldwork for the survey is described. If there was any doubt as to whether, or not, a house was an African house, care was taken to investigate the matter by visiting the house when the "borderline" was drawn, and all houses in every street block in the inner zone were counted by fieldworkers.

The Middle Zone

The bulk of the African population lives in the middle zone which extends radially, as shown in Fig. 1, from the limits of the built-up inner zone, that is, the "borderline" described above, towards the Municipal boundary line marked BCDH on the map (Fig. 1). European suburban development in this part of Lourenco Marques is, because of limited transport and other urban amenities (like electricity), restricted almost entirely to building along the few made-up roads that traverse the area on their way from the city to the neighbouring territory of South Africa, the north of the Province and the airport.

Figure 3 is an aerial photograph of Lourenco Marques which shows the inner zone marked ABCD lying on the sea front in the bay and the middle zone (marked BCDEFG) extending inland beyond it. The white line CF is a road in the process of construction leading from the city to the airport at Point F. The area CDEF is densely populated and contains the majority of the middle zone population. That to the right of it, CBGF, is sparsely populated especially along the beach front which is being developed to attract tourists.

In the centre of the photograph to the left of the airport road marked CF, a group of houses can be seen arranged in a semi-circle. This is the native housing estate called the "bairro indigena". Opposite it on the other side of the road, and nearer to the point C, is the circle of the bullring behind which is another small housing estate which accommodates people who were moved to build the new road to the airport.

It is not possible to see in a photograph of this scale, the scattered nature of the dwellings in the middle zone, but the contrast between the developed area on the sea front and the relatively undeveloped outskirts of the town is visible.

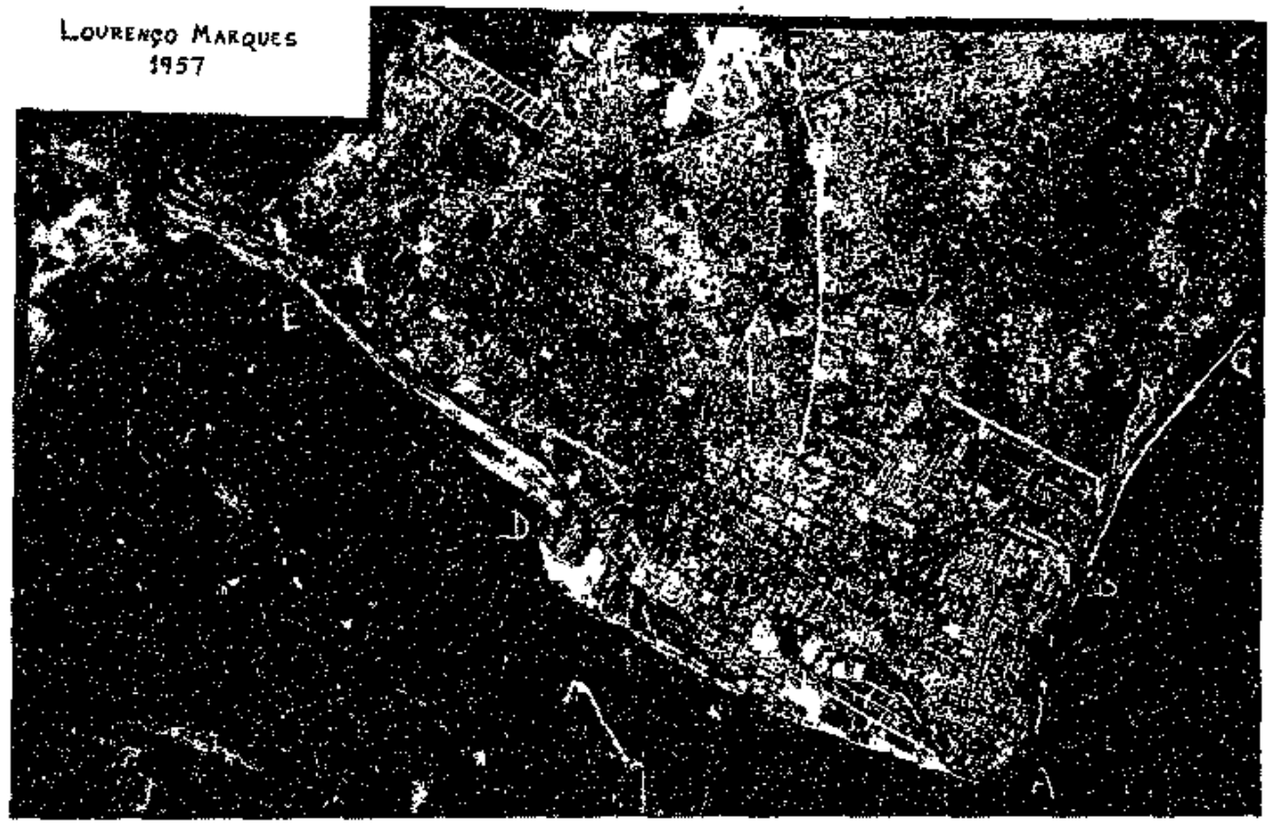

Fig. 3.

The African population in the middle zone does not live in townships or locations as in other territories in Southern Africa. With the exclusion of the two small Municipal housing schemes ("bairros indigenas") already mentioned, houses are not built under Municipal regulations nor are the usual urban facilities, such as made-up roads, street lighting, drainage, water-borne sanitation or a reticulated water system in evidence, except as has been mentioned in the sectors on the main roads where public transport is also a feature of developing urbanisation and town planning.

Apart from the two small "bairros", the houses of the middle zone population are scattered about without any planning, or organisation, on the undeveloped land between the few made-up roads. The houses are, in general, of simple construction and temporary nature, as African title to land is restricted in the towns. A large number of the houses are thatch-roofed huts built in tribal style out of river reeds and wooden struts, most of them without any addition of daub or plaster. An increasing number of more durable houses is appearing, however, and these are also more westernised in form. As a rule the nearer the houses are to the city centre,

the more westernised they become. Development is by no means uniform nor is it regulated by urban planning with the result that primitive huts are to be found scattered about amongst the more sophisticated houses.

In general the pattern of life of the Africans living in the middle zone is relatively undeveloped from a western point of view. Nevertheless, there is evidence everywhere that more and more of the attributes of westernised urban life - chairs, tables, beds, curtains, kitchen utensils - are being introduced into even the simplest dwelling, chiefly by the men who are the wage earners. Men are beginning also to ride on bicycles, where they can afford them, and to purchase battery wireless sets. A few have motor vehicles and, more rarely still, enough capital to set up a business of their own. Some, too, are joining the new elite of "white collar" workers as civil servants, teachers, nurses or office clerks.

The women folk are less advanced because of their limited contact with the westernised urban world. Barefooted women and girls carrying home tins of water on their heads from the municipal stand-taps, or fountains, provide a familiar scene in the middle zone. They

carry their babies suspended at their backs in the tribal "tehe" - a cloth sling tied at the shoulder - while several yards of brightly coloured cloth, the "capulana" of Portuguese East Africa, are draped around their simple western-style cotton dresses. Few of them are ever remuneratively employed, and official records[3] show that the large majority are illiterate. More and more of their children are being delivered in maternity hospitals in the city, however, where their chances of survival are increased. These children may later also have some schooling, seek employment and settle permanently as urban dwellers in Lourenco Marques.

The process of urbanisation of this population has been slow and still is slower than that of many other cities in Africa where industrialisation has accelerated the education and social development of the African people.

The Outer Zone

In the peri-urban area defined as the outer zone, Africans live an almost rural life except for servants in European houses in the two villages of Matola and Machava. Families are grouped under tribal headmen and their

social organisation is closer to that of tribal life than that of the townsmen. The males work in the city of Lourenco Marques or in the developing industries in the outer zone, and while the outer zone dwellers have few urban amenities, they are gradually acquiring many of the artifacts of urban life. However, the whole character of this outer zone is changing with industrialisation and the restriction of African settlement in the vicinity of Matola and Machava.

The outer zone has physical boundaries on all sides between points EF, GH and D (Fig. 1), and only between points E and D there is no natural, or constructed, limit to the defined area. Here it was necessary to determine the extent of the outer zone population by some means other than a visible boundary. It was learned from official records at the Administrative Post of Machava, that the population lived in family groups under tribal headmen and that their location in the district was fixed and known. It was possible, therefore, to choose arbitrarily out of a total of 13 of these tribal groups, the 6 who lived nearest to the railway running along the line EH in Fig. 1, and the municipal boundary line from H to D (Fig. 1). The choice was

made on the basis that no family was to be further distant from these two lines than the school marked "Escola" in the territory of "Chichambane" (Fig. 1), and all tribal groups were to be situated between the marshy strip called the "Infulene" (NW northwards) and the railway to South Africa (NE westwards, Fig. 1). This included all of the families in 6 of the groups. The 7 remaining tribal groups were excluded on the grounds of distance from the city and from transport communications which might prevent them from making use of the same medical services as other members of the population-at-risk to cancer in Lourenco Marques.

PART II

THE SURVEY

Sampling

Very little is known about sampling techniques as applied to uncharted African areas, and statistical difficulties in surveys of this kind are greatly increased where Africans living in the outlying area, or outskirts, of a town have a residential distribution which lacks a ready-made frame for sampling. In the middle zone of Lourenco Marques there were no suitable records or guiding maps available for sampling purposes. As indicated previously, the usual city, or township, structure of roads and street blocks with numbers, used in the inner zone, was lacking, and there was no community organisation, such as a tribal system of family grouping, for use as an alternative frame. Administrative records were suitable for sampling in the outer zone, but unreliable for the densely populated and less stable group of the inner zone amongst whom development towards urbanisation has introduced a new type of household which is not based on tribal life. These records were also not

adequate to enumerate the "hidden" members of the population such as illegal entrants into the proscribed area, aged relatives on protracted visits and various types of "squatter", especially women and children.

The Frame for the Middle Zone

In the present study the main difficulty was to find a suitable frame for sampling the population as a whole so as to make the resultant sample a representative one. A careful check of the survey area had shown 1) that the three zones inner, middle and outer, had certain distinguishing features which had to be taken into account and 2) that stratification of the population on a territorial basis would simplify the population count and increase its accuracy. Sampling frames could be found for the populations of the inner and outer zones as mentioned above, and the main problem was presented by the scattering of the dwellings in the middle zone. The solution of this problem became the major task of the survey.

Advantage was taken of aerial photographs prepared by the Portuguese Government, Missão de Fotogrametria Area de Moçambique. By placing together a numbered

series of strip-photographs, making corrections for overlapping, it was possible to extract, without difficulty, those of them that covered the inhabited area of Lourenco Marques, and to enlarge the 29 on which the middle zone could be delimited. The two main requirements for the construction of the sampling frame were firstly, that it should be possible to divide up the whole of the middle zone into inhabited "area units" and secondly, that the number of people living in a random sample of these "area units" could be counted by interviewing the inhabitants in their houses. It was evident that the key to the problem of the sampling frame lay in the unit chosen for interviewing and the relationship of that unit to the frame.

Preliminary investigation of the middle zone by car, on foot and on horseback, disclosed 1) that the well-worn roads and paths that honeycombed the area could be employed in relation to landmarks of all kinds to effect a division into clusters, or "area units", that were to be the primary units of the sampling scheme for the middle zone population; 2) there existed a suitable dwelling unit which could be clearly defined and which would form the basis of the division into "area units"; 3) not all

dwelling units were single structures and a suitable term would have to be found to describe the unit chosen for interviewing so as to avoid errors and omissions in field work.

The Unit for Interviewing

Many Africans in Lourenco Marques have single-roofed houses but the majority of them live in what can be described as an urban adaptation of the tribal homestead called, in the native language of this region, the "munti". Traditionally the "munti" is the home of a family, or extended family, and consists of a group of huts surrounded by an enclosure, or fence, which delimits it as a dwelling unit. This forms a kind of courtyard for people who do all of their cooking and most of their living out of doors. The courtyard often becomes simply a backyard in Lourenco Marques where the "munti" is found chiefly in some modified form. As Africans become urbanised there under Western European influence the group of thatch-roofed huts, built in the traditional manner, is replaced by the single rectangular bungalow. New kinds of building materials, procurable in the urban area, are introduced instead of the reeds

and thatch of the traditional huts, or in addition to them. Plastered walls, cement floors, glazed windows and wooden doors with metal handles are introduced and corrugated iron is often used for roofing and for the building of the walls.

On Plate I, Figures 1 to 8 show a variety of African dwellings in Lourenco Marques, from a simple hut in Fig. 1, to a corrugated iron bungalow with windows, doors and verandah, in Figures 7 and 8. All have reed fences except Figures 1 and 4. In Figures 7 and 8 these fences enclose backyards but in Figures 2, 3, 5 and 6 they surround the houses entirely, and there was more than one structure enclosed by the fences. The houses in Figures 7 and 8 are built on a concrete base but all of the others are set directly on the sandy soil.

The major change from the traditional "munti" to the urban house is represented by the partitioning of a single-roofed dwelling into separate rooms for living, sleeping and even for cooking, traditionally an outdoor activity. Even where houses of this kind exist, however, it is not uncommon to find in the back yard a one-roomed structure, usually a hut, in which lives a tenant or some member of the family but recently come to town.

PLATE 1



FIG. 1



FIG. 2



FIG. 3



FIG. 4



FIG. 5



FIG. 6



FIG. 7



FIG. 8

The term "munti" was chosen as being most appropriate to describe the African dwelling unit in the survey area at this stage of urbanisation. This term is used everywhere in the outskirts area, and was thus clearly understood by investigators and respondents alike. The "munti" could, moreover, be identified as a structural unit on the aerial photographs.

Figure 4 shows part of an aerial photograph divided into "area units" of which 5 "area units" and parts of others surrounding them are visible. The lines which demarcate these clusters of Munti into area units (numbered for sampling) have been drawn in on the photographs. Figure 4 demonstrates:-

1. the scale of the aerial photographs, after they had been enlarged, and the possibility of using them as field maps.
2. the division of clusters of Munti into "area units" using roads and paths and landmarks such as trees, open spaces, fences or hedges surrounding dwelling units, to serve as a guide in distinguishing the clusters as well as the Munti.

3. the scattering of the Munti and their relative shapes and sizes.

In the top corner of "area unit" number 9 in the centre, there is a shop slightly overshadowed by a large tree. Behind this shop, lower down in the photograph, there are three Munti partly surrounded by hedges. All three have more than one structure in the dwelling unit and all have round thatch-roofed huts excepting one in the lower middle Mur 1, where a rectangular structure is visible. Other Munti in this "area unit" and in those surrounding it, can also be seen to contain one or more structures of different shapes and sizes. Munti with only one structure, and no fence, are visible scattered about amongst those enclosed by fences. The variety of Munti demonstrated in this photograph is typical of the survey area where there are thatch-roofed huts surrounded by hedges, side by side with more westernised bungalows made of corrugated iron and with reed fences enclosing backyards (as shown in Plate I).

The Munti was defined so as to include for enumeration in the survey, persons like tenants, widows without families, single persons living on their own in one room, house or hut, and even occasional groups of unrelated



Fig. 4.

persons residing in community, like the twenty-four "Zionists" who were found housed together as a religious sect. Such persons are found in urban areas but are unknown as social units in tribal homesteads.

It was in no way practical to attempt to number all the "*munti*" throughout the whole area in order to take a random sample of them. First, the scattering of the units over a widespread area, containing so large a number of dwellings, situated in terrain which was difficult to cover, would raise the cost of the survey beyond the resources available, and would increase the difficulties involved in finding the houses for interviewing. The performance of newly-trained interviewers in these circumstances would, in any event, probably counteract any statistical advantages that might accrue. Secondly, there existed a hazard in that houses built since the taking of the photographs would not be visible on them for numbering and counting. Thus a total count of dwellings from the photographs would not coincide with the number which would be found in the field, a factor which could not be ignored although the photographs were only 10 months old when they came to be used. An African house of the type so common in Lourenco Marques can be

constructed in a matter of weeks and it was not possible to estimate the number of new houses that might be found.

In these circumstances it was thought advisable to take a random sample of "area units" and to interview all, or a stated number of dwellings in each of them. As the dwelling units varied somewhat in type and size with their density, and as this might well affect the size of the family or household in each, it was decided to choose at random a number of "area units" which would be widely scattered over the 29 photographs. A scheme was evolved in which 21 of the photographs were included.

Conversion of Photographs into Field Maps

The first step in the construction of the sampling frame was the enlargement of the photographs to 24" x 24" so that they could be used as field maps. It was found that at that scale, paths and by-ways as well as physical features, individual huts and structures of all kinds, were clearly distinguishable, as were the outlines of the fences, or hedges, that surrounded the majority of dwelling units. It proved simple to use trees, especially the large evergreen, cashew nut and mango trees that

abound on the outskirts of Lourenco Marques, together with pools of water, swamps, fountains, shops and clusters of dwellings of different shapes and sizes, in marking off the "area units" for sampling purposes. This was done so that these landmarks would be effective for the purpose of guiding interviewers in locating dwelling units when the photographs came to be used as "field maps". The division into "area units" was achieved by tracing on the photographs in india ink, boundary lines which enclosed in each and every "area unit" as nearly as possible 20 - 30 dwelling units ("*muzi*" by definition). All the major roads and many of the paths had been traversed in the preliminary field excursions. They were now recognisable on the photographs and were used, wherever practicable, as the boundaries for the "area units". In the densely populated areas it was not always possible to construct "area units" bounded on all sides by paths, or roads, but other distinguishing features or landmarks, made it possible to draw the lines between the houses without causing confusion later in the fieldwork. Figure 5 shows one of the aerial photographs divided into "area units". On the left a number of dwelling units have been excluded because this photograph overlaps with

another, in the series, on which these dwelling units are included. The appearance of the photographs before the division into "area units", is demonstrated by contrasting the scattering of dwellings on the left border of the photograph with the relative order of those in "area units".

The "area units" varied considerably in shape and size, but great care was exercised in making them as equal as possible as to the number of dwelling units each contained. Errors could be expected to arise where no fences surrounded the dwelling units and, in the instances already mentioned, where new dwellings had appeared since the taking of the photographs, where dwelling units were placed closely together, and also in instances where landlords had built a number of rooms in one structure, for renting to single tenants (see top right-hand corner of "area unit" No. 18 (Fig. 5). As the success of the estimation of the population numbers, within known limits of uncertainty, depended upon the reduction of the coefficient of variation between the primary units, checks were made after the division of each photograph into "area units" had been completed. Here problems, or doubts, arose, they could be dealt with before the "area

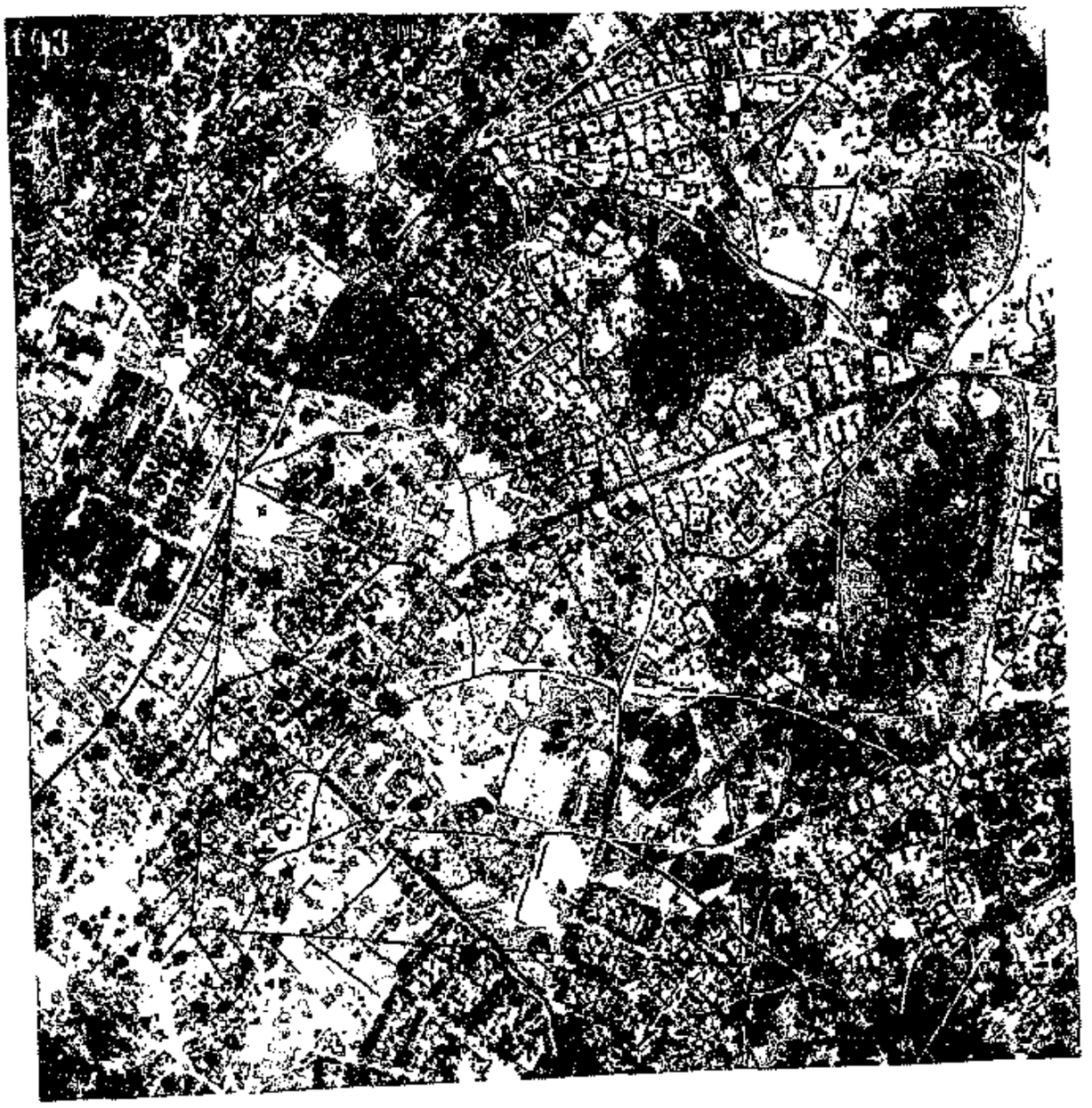

Fig. 5.

units" were numbered for sampling.

The Sample

The preliminary work had made it clear that in order to attain a reasonable degree of accuracy the survey should be carried out in stages, for the different sections of the population in the inner, middle and outer zones and that it would be necessary to use a different, or modified, technique for enumerating separately, the strata into which they were divided.

The sampling plan had to take into account four basic field difficulties;-

1. Lack of maps, streets and means of public transport in the middle and outer zones, that is, the greater part of the area under survey.
2. The use of interviewers newly trained and not yet familiar with field techniques.
3. The problem of "call-backs" in uncharted areas where it might not always be easy to find a dwelling unit again after two or three days.
4. The difference in the composition and the mode

of life of Africans living in different sections of the survey area.

To meet these difficulties it was decided to choose throughout the survey area large "clusters" or units, each of these clusters to be completely surveyed. Such large units would reduce to a minimum the problems of location and transport as well as the demands on the interviewer with regard to the selection of respondents.

The inner zone consisted of 163 inhabited blocks, bounded by streets, excluding blocks of Government and Municipal buildings, shops, railway marshalling yards and business premises of all kinds, without residents. Nine of the 163 blocks were chosen at random and completely investigated in a pilot survey, i.e. every dwelling unit on these nine blocks was visited and the servants, or resident labourers, were interviewed to obtain a) the number of servants per dwelling unit; b) the number of dwelling units per block. The results from these nine blocks gave the necessary estimates of "between" and "within" block variances on which to base an estimate of the required sample size. Because the variances were considerable it was decided to make in the 163 blocks, a

complete enumeration of all dwelling units i.e. houses, shops, or other premises, with resident African servants, or labourers. Thirty blocks, in addition to the nine originally surveyed, were chosen at random and from each of these a random sub-sample of three dwelling units was taken for investigation.

The two small villages of Matola and Machava in the outer zone were added to this stratum of the inner zone because the servant populations were similar in the city and the villages. In Matola 10 blocks were selected at random out of 36, and the number of houses and servants per block were counted. In Machava, as there were only 28 blocks and fewer houses per block, a complete count of all houses and servants was made in the 28 blocks. Three houses were selected at random from every block in the sample in Matola, and two from every one of the 28 blocks in Machava, and the servants in them were interviewed. In order to verify the similarities between the servant populations of the two villages extra precaution was taken in Machava because that village appeared to be less advanced towards urbanisation than Matola, which is on the main road from Johannesburg to Lourenco Marques, of which Matola is an extension. No significant differ-

ence was found between the villages.

In the middle zone the following procedure was adopted:-

1. Seven out of the total number of 29 photographs were selected with a probability selection proportional to estimated relative population density. The estimate was made visually. All photographs, before enlargement, were laid out in strips on a table and, after careful examination, one was chosen as having the greatest density of dwelling units. This photograph was given a "weight" or value of 10 and other weights were relative to this. A representative sample of 7 photographs was chosen in accordance with this weighting as indicated in Appendix I.

2. Forty-five "area units", out of a total of 297 on the seven enlarged photographs, were then selected at random as follows. Three "area units" were chosen at random from each photograph and the inmates of every Munzi in these 21 "area units" were interviewed. An

additional 3 "area units" were again chosen at random from every photograph but only the Munti in every "area unit" were counted. An extra "area unit" was included in error when the counting was done and it was incorporated in the sample. Thus Munti were counted in 24 "area units" in addition to the original 21, to make 45. The results of this investigation showed that the estimates of the relative population density were inadequate as population density was not directly related to the density of the dwelling units. The more widely scattered Munti often had larger numbers of inmates than dwelling units that were closer together. As this would lead to unsatisfactory estimates of the population totals, the sampling plan was amended and extended as follows in 3 and 4.

3. All the remaining photographs (i.e. 22) that covered the middle zone were enlarged and divided into "area units" in the same way

as the original 7. The "area units" were numbered from 1 to 486 and 54 were chosen at random for inclusion in the sample. They were situated on 14 of the 22 photographs. A count of the total number of Munti was made in each of the 54 "area units" and the inhabitants in three Munti, also chosen at random, from every "area unit" were interviewed.

4. The 24 "area units" from the original seven photographs in which previously only a count of Munti had been taken, were revisited and inhabitants in 3 Munti, selected at random, were interviewed in each and every one.

The outer zone was treated separately in an additional stratified sampling scheme. From the administrative records in which the number of families were enumerated in order and by name, 5 families were chosen at random for interviewing, from the tribal group under each headman. A pilot study revealed that with the aid of African administrative employees respondents selected

at random from the official records could be located with relative ease. However, long distances between Munti situated in sand and bush terrain made field work in this area an arduous task, and it was necessary to reduce responsibilities for interviewers not yet fully conversant with field techniques. The necessity for "call-back" interviews had to be avoided as far as possible. Each family lived in its own Munti but families were not grouped in equal numbers under their tribal headmen. There were over 200 families in some of the groups and less than 100 in others, but it was decided to adhere to the consistent number of 5 families, or Munti, for each headman and the sample consisted of 235 Munti, or 5 for each of 47 tribal groups. This complicated calculation from a statistical point of view, but seemed the method of procedure best suited to the requirements of the field. The sample survey in the outer zone was, in effect, a check on the administrative records which were thought to be more accurate as to the number of families than as to their composition, especially as regards age and sex, considering the passage of time since the register had been compiled.

The final sampling plan thus consisted of the

following strata:-

1. The inner zone, which included the built-up part of the city of Lourenco Marques and the two villages of Matola and Machava.
2. The middle zone, with two substrata, namely a) the area covered by the 7 original photographs; b) the area covered by the remaining 22 photographs.
3. The outer zone, with 47 substrata, one for each headman and his group of families.

A simple random sampling scheme was used in all of these strata with the exception of 2(b) where a random two-stage scheme was necessary.

Every adult in the sample population was interviewed. Particular care was taken to ensure that no person was counted twice and that all persons were included in the residential area where they normally slept. Thus visitors of a few days duration were excluded and day labourers, including servants who "slept out", were counted as part of the population of the area to which they returned at night after work. Children under the

age of 15 years were not questioned directly except in the case of the small number of servants who were under fifteen and were obliged to speak for themselves in the absence of any members of their families. In all other cases parents, or guardians, or adult brothers or sisters, answered questions on behalf of children. No evidence was accepted from outside of any particular Kunti or from hearsay. In this way, 4,291 persons of all ages and both sexes, were interviewed and enumerated. This represented approximately 4% or 1 in 23 of the total population.

TRAINING OF FIELD WORKERS

All over Africa in every field of research, there is a scarcity of skilled technical assistants. This applies particularly in social research in which language and culture differences make it inadvisable, or even impossible, to recruit from outside of an area, personnel who may have acquired training and experience elsewhere. In the direct questioning of an African population for demographic and environmental data, African interviewers who are thoroughly familiar with the people and the area

under survey are a necessity. Where few Africans have been able to acquire technical skills (except perhaps in industry) and even fewer have become professionally qualified, the problem is to find field workers with sufficient skill, or training, for scientific interviewing. Thus, one of the first tasks in an African social survey is the preparation of field workers for this purpose. Semi-literate trainees, who are capable of understanding what is required, and who possess other qualifications which tend to base some training for social research, can usually be found in the larger urban areas. In Southern Africa such workers have the distinct advantage over non-Africans, of local knowledge combined with ready adaptability to the interview situation. If at the same time their basic standard of education and training were higher, much more could be achieved in this field of research than is possible under present conditions. Nevertheless, while in other parts of the world like the United States of America and Great Britain, it is common practice to employ highly trained social workers for interviewing, in the less developed areas of Africa the services of semi-skilled workers, if carefully supervised and skillfully directed, may be equally

rewarding and all that is required for the basic fact-finding which is a present necessity.

In Mozambique, as in many other parts of Southern Africa, it was not possible to recruit qualified personnel for social research and field workers had to be specially trained for the purpose. The most suitable persons available were senior African student nurses, chiefly male, who were undergoing training at the State Hospital from which the Cancer Survey was conducted. Sixteen of them were selected from a large group of volunteers and after a month's training, 7 men and 1 woman, whose ages ranged from 18 to 32 years, were chosen for their aptitude and general ability. Only one had received a secondary school education, and it is interesting to note that he was not one of the four who eventually became the most competent of the team.

The training of the students was not a simple matter, mainly because while they were fluent in Portuguese and one or more native languages, they knew little or no English. The writer, on the other hand had no Portuguese at the commencement of the survey. Rather than use an interpreter, who might convey important concepts or directives unsatisfactorily, or incorrectly,

recourse was had to an indirect method of teaching, using the assistance of an able European sister-tutor at the Hospital. Her understanding of what was required, her interest in the project and her patience, enabled her to transmit to the students the basic information necessary for them as future field workers. The system worked well as was proved by a test, both theoretical and practical, at the end of the course. The training dealt with practical issues rather than with sociological concepts, the object being to train field workers for fact-finding and not for social work. The field workers were taught to observe and record as accurately and objectively as possible. Emphasis was placed on discipline, that is, adherence to the sample plan, team work and absolute integrity.

With semi-skilled workers, it is necessary to give strict and carefully-formulated directives but it was considered not enough merely to ask an interviewer to carry out instructions. Every field worker was made to understand his function and its relative importance. He was trained to be able, although strictly within the framework of the plan of procedure, to develop his own method of questioning and taking notes at interviews.

provided always that he obtained the answers, and filled in his schedules, correctly and uniformly with others of the team. This step was expedient because the field of enquiry was new and the reactions of the respondents could not be foreseen. As no questionnaire is perfect, nor directives fool-proof, it was necessary to have investigators who, when they went into the field for the first time, would be resourceful when faced with problems that could not be anticipated.

During the period in which the field workers were trained, the writer set about acquiring a working knowledge of Portuguese in order to direct their field work.

INTERVIEWING

Interviewing was kept on a fairly elementary basis and the temptation to find out as much as possible while the opportunity offered, was resisted in the interests of accuracy and economy of resources and time. Before inclusion in the schedule, questions additional to the basic demographic data were carefully considered according to their usefulness and the probability of adequate answers being obtained by field workers, with limited

training and experience, from persons quite unaccustomed to giving information about themselves. The aim in this was to open up the field in such a way as to avoid setting up that resistance which grows so quickly from suspicion or even from the tedium of unduly long questioning. It can take an untutored, elderly person some 15 minutes, or more, merely to establish his age. Thus even a strictly limited number of questions might, in some circumstances, take a disproportionately long time to answer. ...could not be anticipated how long it might take ...ain the answers to a set number of questions from the largely illiterate population under survey, and it was decided to err on the side of restraint rather than to confuse the issue, or risk invalid results, by asking too many questions at one time.

A copy of the schedule of questions used in the field is appended translated from the Portuguese, (Appendix II). Its main feature is that it is concise. It was intended to find the age and sex structure of the population and its composition as regards ethnic grouping, religion, marital status and duration of residence in the urban area. Investigation into social attitudes was confined to aspects concerning hospitalisation and medical

services.

Schedules were completed by the interviewers in Portuguese, but informants were questioned in their own language. Several of the field workers could speak more than one native language and, between them, could interview all Africans native to the Sul do Save (area South of River Save in the Province of Mozambique), and even those few who had migrated to Lourenco Marques from the north of the Province and spoke a native language "foreign" to the South. No white person was present at these interviews as the interviewers and their respondents clearly found it easier to talk to each other when alone, and it was hoped that more valid results would be obtained in consequence. Evidence that this was so and that the interviewers were successful in establishing themselves in the confidence of the respondents, came when a surprisingly large number admitted consulting "nhangas" (native herbalists or medicine men) as well as the recognised medical doctors in clinics and hospitals and when appointments for "call-back" interviews were invariably kept by the interviewees, even at inconvenience to themselves.

Reference to page two of the schedule will show that

the questions were so formulated that answers given to one would check those given to another. Although five questions were asked it was required to know only the extent to which the population came within the ambit of the medical services and, if possible, if this relatively undeveloped population was aware of the kind of sickness that would respond to medical treatment. It is almost certain that a straightforward question as to whether, as a general rule, native medicine was used in preference to western medicine, would not have elicited as accurate an answer as the combined five questions on the schedule. In all events it was unwise to attempt it as all practitioners of native medicine from witch-doctors to herbalists, are illegal in Mozambique, and it was feared that information on the subject would be withheld.

A schedule was completed for every Munti visited in the middle and outer zones and for every house with servants "living in" in the city sample and that for the two small villages of Matola and Machava. No major difficulties were encountered by the field workers in their interviewing, and no one refused to answer their questions excepting a few women who insisted that their husbands had to answer for them. However, as the women

were always present when they did so, these interviewees were not classed as non-responders. The interviewers were taken to the street blocks and "area units" for the first visits, but they were easily able to find these units again for subsequent visits, even without the help of the photographs in the middle zone. There, a field worker would usually finish his interviews for one "area unit" before going on to the next, although the four senior trainees were able to accumulate "call-back" visits in as many as three different "area units" without confusion.

The interviewers had proved themselves capable of understanding what was required of them and of improving their technique with experience. A pilot survey in the inner and middle zones passed the schedule of questions as satisfactory for use in the field and the survey proceeded accordingly.

PART III

RESULTS

The results of this study, like its aims, were two-fold. A framework for investigation was set up and certain basic data regarding demographic and social characteristics were ascertained. These data will be discussed in the order in which they were recorded on the schedule of questions used in the survey. The population estimates with age and sex distribtuion were the immediate and most important objective of the study. They are presented graphically in Figures 9 and 10 and in terms of actual numbers with stated limits in Tables I, II and III.

A natural and further result of the survey, however, was the possibility of comparison of these data with similar data collected for African populations living under comparable conditions elsewhere, and this will follow discussions on the results of the present survey.

Population Estimates

Population estimates show that there was a population of almost exactly 100,000 Africans living within the

defined area of Lourenco Marques at the end of 1957. The bulk of this population, 67,140, was situated in the middle zone while there were 15,500 in the inner zone and 22,150 in the outer zone.

Population estimates with age and sex distribution are shown, with stated limits, in Tables I, II and III. There are 57,400 males and 45,600 females, a total of 103,000 in all strata taken together. This gives a sex ratio of 126 males to every 100 females. The estimates include a group of 3,760 persons who were officially reported as residing in the inner zone of Lourenco Marques at the time of the survey, but who could not be interviewed. They are recorded as contract labourers of various kinds, and are a part of the male migrant labour population. Of this number, 209 were registered as hotel employees, housed on the premises of the large hotels in the city, just over 2,600 worked in the services of the railways and harbours and were accommodated in compounds in the dockyards, while the remainder were administrative labourers and military trainees fulfilling a period of service in barracks in the city area. Included in the total population were also 51 civil prisoners, a few of them women, who were incarcerated in the city's

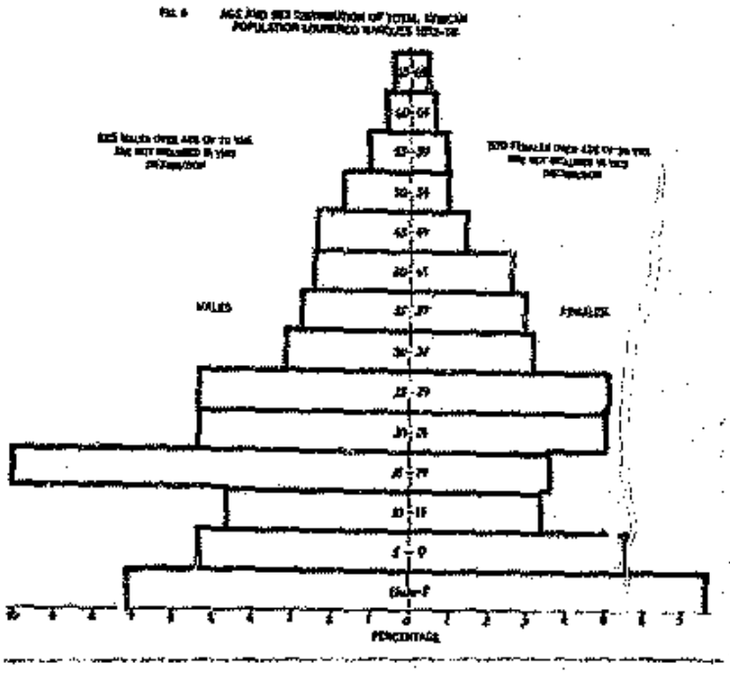

Fig. 9.

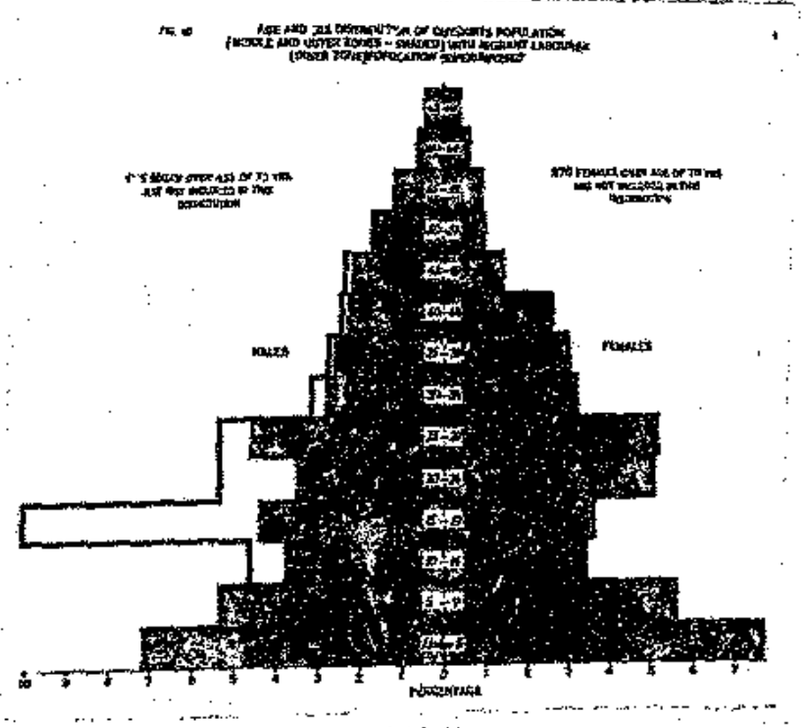

Fig. 10.

TABLE I

TOTAL POPULATION ESTIMATES

		ESTIMATES	95% CONFIDENCE LIMITS
Total	*Urban	14,750	13,900- 15,600
L.M.	*Semi-Urban	88,300	84,400- 92,200
Population	Total	103,050	98,850-107,250
Total	Urban	14,000	13,200- 14,900
Males	Semi-Urban	43,400	40,900- 45,000
	Total	57,400	54,750- 60,050
Total	Urban	750	500- 950
Females	Semi-Urban	44,900	41,900- 47,900
	Total	45,650	42,650- 48,650

Sex Ratio: $\frac{57,400}{45,650} = 1.26$

Note:

1) The above includes 3760 individuals who are known to live in Lourenco Marques but who could not be included in the survey. Their age structure is at present unknown.

In the above tables we have assumed that all 3760 are males.

2) * Urban (inner zone)
Semi-urban (combined middle and outer zones)

TABLE II

AGE STRUCTURE OF AFRICAN MALE POPULATION OF L.M.

(Not including 3760 employees & servants not interviewed in survey)

No observed		Estimated total		95% Confidence Limits		Estimated total for L.M.	% of total	95% Confidence Limits for L.M. Total
*Urban	Semi-Urban	Urban	Semi-Urban	Urban	Semi-Urban			
-	283	-	7200		6250-8150	7200	13.4	6250-8150
-	208	-	5410		4580-6240	5400	10.1	4600-6250
90	159	870	3830	750- 990	3160-4500	4700	8.1	3150-4600
422	168	5850	4230	5260-6440	3540-4920	10100	18.8	3500-5000
126	140	1860	3550	1680-2040	2890-4210	5400	10.1	2850-4200
54	181	730	4650	480- 980	4000-5300	5400	10.1	4000-5300
31	114	390	2830	240- 540	2240-3420	3200	6.0	2250-3400
13	104	160	2620	110- 210	2140-3100	2800	5.3	2150-3100
13	88	160	2320	110- 210	1820-2820	2500	4.7	1800-2800
16	88	210	2180	140- 280	1730-2630	2400	4.5	1750-2600
4	69	55	1680	25- 85	1290-2070	1750	3.3	1300-2100
-	48		1120		800-1440	1100	2.1	800-1450
-	26	4	670	1- 10	400- 940	700	1.5	400- 950
-	17		480		230- 730	500	0.9	350- 780
1	21		620		340- 900	625	1.1	350- 900

n (inner zone), semi-urban (combined middle and outer zones)

TABLE III

AGE STRUCTURE OF AFRICAN FEMALE POPULATION OF L.M.

.)	*No Observed Urban	Semi-Urban	Estimated total Urban	Semi-Urban	95% Confidence Limits Urban	Semi-Urban	Estimated total For L.M.	% of total	95% Confidence Limits for L.M. Total
	-	311	-	7700	-	6760-8640	7700	17.0	6760-8640
	-	226	-	5610	-	4790-6430	5610	12.4	4790-6430
	4	132	35	3370	20- 50	2700-4040	3400	7.5	2700-4040
	12	137	135	3550	80-190	2860-4244	3690	8.2	2850-4250
	6	197	75	4960	35-120	4210-5712	5040	11.1	4200-5730
	3	200	40	5100	20- 60	4390-5810	5140	11.2	4400-5800
	-	126	-	3250	-	2670-3830	3250	7.1	2700-3850
	4	123	55	3030	30- 80	2480-3580	3090	6.8	2500-3600
	-	105	-	2700	-	2150-3250	2700	6.0	2150-3250
	-	62	-	1540	-	1130-1950	1540	3.4	1150-1950
	1	45	5	1190	1- 11	810-1570	1190	2.7	800-1600
	-	43	-	1060	-	720-1400	1060	2.4	700-1400
	-	30	-	760	-	480-1040	760	1.7	500-1050
	-	17	-	520	-	260- 780	520	1.2	250- 800
	-	23	-	570	-	370- 770	570	1.3	400- 750

n (inner zone), semi-urban (combined middle and outer zones)

prison at the time of the survey.

Age and Sex Structure

Tables II and III show the distribution of the population according to age and sex. No accurate information was available as to the age structure of the 3,760 contract labourers, trainees and prisoners, but it is known that, with the exception of the 51 prisoners (too few in number to be treated differentially), they were all officially registered as males of working age. They were not included in the age distribution for males (Table II) but only in the estimate of the total number of males in Table I.

In Tables I, II and III, the total for each section of the population and for each age group, is calculated as a separate estimate. The inner zone section includes 1[illegible],000 males and 750 females residing on the premises of their employers in the city of Lourenco Marques, and in the two villages of Matola and Machava (situated in the outer zone). The semi-urban population, as mentioned previously, consists of the combined populations of the middle and outer zo[illegible] living on the outskirts of the

built-up city area.

An examination of the age and sex distribution in Tables II and III reveals fluctuations in the numbers for both sexes in various age groups as follows:-

1. An excess of females (13,310) over males (12,600) in the first decade (0 - 9 years).

2. The influx of a large number of migrant labourers, 6,720 males and 170 females, in the second decade (10 - 19 years) coupled with a decline in the number of semi-urban dwellers, sharper for females than for males, and resulting in an abrupt change in the sex ratio with a considerable preponderance of males.

3. A sudden increase in the female population between the ages of 20 and 30 years and a contrasting decline in the number of males. The latter continue to decrease in number until, in the 40 - 44 years group, the females predominate.

4. A more rapid decline in number of females than

of males from the age of 45 years onwards.

5. Paucity of numbers for both sexes in the age groups over 65 years.

Migrant Labour and the Age Distribution

As the population pyramids (Figs. 9 and 10) demonstrate, the sex imbalance in the population as a whole, is clearly attributable to the preponderance of males in the inner zone even when the 3,760 contract labourers are excluded. By contrast, the more settled population of the middle and outer zones, when taken together, show an excess of females (44,900) over males (43,400). This can be accounted for largely by the predominance of females in the outer zone. The sex ratio for the combined populations of the inner and middle zones was 140 males per 100 females, but was reduced to 126 males per 100 females for the total population after the inclusion of the outer zone. This was not unexpected because it is from the less urbanised, or rural, areas that men are known to migrate to the mines of South Africa, or elsewhere, leaving behind the women with the old people and the children.

Like the sex imbalance, the skewness in the age distribution of the African population is due largely to the presence of the considerable number of young male migrant labourers in Lourenco Marques. The pyramidal diagram in Fig. 9 shows the age distribution for the total African population, excluding the 3,760 contract labourers who were not interviewed, while Fig. 10 demonstrates the effect on the profile of this pyramid when the migrant labourer population of the inner zone is added to that of the combined middle and outer zone (outskirts) populations, represented by the shaded area of the diagram. The maximum width of the pyramid remains at the base but the profile is distorted by the sudden influx of young males between 15 and 20 years of age when the number of males is at its highest. As there are only 750 female migrant workers in the inner zone, and not more than 135 of them in any one age group, their presence makes little impression on the profile in Fig. 10. There are only 1100 males and 1090 females over 65 years old. Together they constitute just over 2% of the total population. Here, too, the addition of the outer zone population to the combined inner and middle zone sections resulted in a significant difference

in population composition, and the percentage of "over sixty-fives" was raised from 1% to 2% of the total population.

It appears that male migrant workers come into Lourenco Marques between the ages of 15 and 30 years and that their number drops sharply after the age of 20 until there are only 59 (out of 14,000) male migrant labourers in the city, who are over 50 years of age. The return of some of the migrant labourers to take up residence in the middle zone, after the expiry of their first contracts, may be reflected in the rise in numbers of that section of the population between the ages of 20 to 30 years. The corresponding increase in the female population in this age period would be interesting to investigate.

The influx of women to the urban area may result from the annual migration of large numbers of males from the rural districts of Mozambique to industrial cities in neighbouring territories. One of the consequences of this departure for work in foreign minefields, is the notable predominance of females in the population of the Province as a whole and particularly in the rural districts.[3] Some women are brought into Lourenco Marques

by men who wish to settle there and to have their families living with them. Other women, however, drift in on their own in the hope of improving their opportunities of marriage or their low economic status - the result of hardships brought about by the migrant labour system which leaves women unattended in the rural areas. No young women were found living alone in rooms, or houses, on their own, but always with members of their families who had already built homes for themselves on the outskirts of the city.

The factors determining the migration of African women from rural to urban areas differ from one territory to another and influence the resultant age and sex structure of the population accordingly. In Lourenco Marques where established urban dwellers live in houses (Munti) of their own construction and in semi-rural conditions in many parts of the outskirts area of the city, it is not difficult for newcomers to settle down and adapt themselves to urban life. In South Africa the situation is very different. Although migration of women other than domestic servants does occur, deterrents to the influx of women who are not seeking employment are, official restrictions of many kinds and the difficulties involved for the women, in finding

accommodation for themselves and their children in the cities where Africans are segregated in townships and are obliged to pay rent for municipal houses. It may be assumed that men would like to have their wives and children living with them and only the difficulties of accommodating them and supporting them in the towns keeps the migrant labour system in operation with the resulting abnormal age and sex structure found in urban areas in Southern Africa.

The age distribution of the African population of Lourenco Marques demonstrates the abnormality in age structure which can be expected for urban Africans where migrant labourers spend only a contract period in areas controlled by Europeans, semi-migrant workers live on urban outskirts for the greater part of their productive years and only a small proportion of Africans settle permanently in the cities and towns, while the majority return, in their declining years, to tribal homes in rural areas. The proportion of persons over the age of 60 years to the total population, is characteristic for African urban populations in South and East Africa and in the Copperbelt of Rhodesia, as will be shown in Part IV of this study.

Marital Status

The marital status of persons over 15 years of age in the inner and middle zone sections of the population was investigated in the city blocks of the inner zone sample, and in the sample of 21 area units in the middle zone. Over 85% of the men and 58% of the women in the inner zone were unmarried. This is easily understood when the youth of this population of migrant workers is considered. In the middle zone marital status is reflected in the following table:-

TABLE IV

	Males	%	Females	%
Married	302	48.3	292	45.3
Single	190	30.4	114	17.7
Divorced	3	.5	29	.5
"Junto" (living together)	129	20.6	134	20.8
Widowed	1	.2	75	11.7
	625	100.0	644	100.0

The term "junto" is a Portuguese word describing an irregular union sanctioned neither by the Church nor by

tribal custom. It is simply an alliance formed by a couple who live together, often with several children, as if married. No ceremony has taken place and no "lobola", or bride-price, has been passed, either in money or cattle, to effect a customary union on a tribal basis. This situation has become commonplace amongst urban Africans in Southern Africa. Lourenco Marques, with so many of its adult males and females in the most settled part of the population living in this state, is no exception, in spite of the fact that women are not as independent in Mozambique as they are in South Africa where, if deserted, they can seek employment as domestic servants or factory hands.

In general, the large number of women, including widows and divorcees, in the urban area of Lourenco Marques, probably plays an important part in determining their marital status. The women have a depressed economic position on the one hand and relative freedom of movement to and from the urban areas on the other. It is therefore easy for men to find women to live with them, married or unmarried. The low wages of the males, in an area which is not industrially developed, and the general breakdown of tribal customs under urban conditions, result in a failure on the part of the men to provide the

bride-price or "lobola" which is traditional in African marriage. Nevertheless, as three quarters of the population of the middle zone (the large majority of the total population of Lourenco Marques) are stated to be Christian, the proportion of irregular unions amongst them suggests the failure of religious institutions to replace tribal custom in maintaining social stability.

Table IV shows that a considerable number of women, in comparison with men, are widowed or divorced although there are more single men than single women. Here again the disrupting effect of migrant labour can be seen. A lack of any substantial industrialisation results in a failure to absorb the male migrant labourers and transform them into a stabilised labour force. These males drift out of town in large numbers to leave only a few men in excess of women in the oldest age groups. It is significant that the predominance of women in the first decade of life in Lourenco Marques is not maintained throughout the older age groups although women seem to be slightly more stable as urban dwellers than men. They stay for longer uninterrupted periods once they have come to town, but are probably obliged to leave it earlier than the men because they have no means of subsistence other than that

provided for them by men.

In tribal areas women are employed in agriculture and contribute towards the general subsistence of the family group. When they come into the town there is no paid work for them by which they can do this and they turn to petty trading in foodstuffs. This type of trading is described by Banton in his recent study of Freetown (4) which city, like Lourenco Marques, is primarily a commercial and administrative centre. Banton says that the women of Freetown "peddle foodstuffs at an extraordinarily low level of profit". Women do this also in Lourenco Marques where many of the foodstuffs are merely wild fruits and plants plucked from the bush or fields surrounding the town. Elderly widows who cannot go about collecting such foodstuffs may turn to brewing of alcoholic beverages from indigenous fruits and plants. General poverty, however, makes it impossible for them to support themselves adequately by either of these means of trading and relatively few elderly women are to be found living alone in the city.

TRIBAL BACKGROUND

No detailed enquiry or statistical analysis was carried out regarding tribal background or religion. Respondents were simply required to state their religion and tribe. No correlation was found between use of medical services and tribal background or religion.

Figure 11 shows the tribal distribution of Bantu speaking people in Mozambique.(5) The population of Lourenco Marques is drawn from the area South of the River Save (Sul do Save) and belongs predominantly (60%) to the Thonga (Ronga)/Shangana group. The Bitonga and Chope people together represent 30% of the total and the remaining 10% is made up of other tribes including the Swazis, who come from the region South of Lourenco Marques, the Chuabos and the Macuas who have their origin North of the River Save, as indicated in Fig. 11.

Tribal differences are not marked and the lingua franca of the town called simply "Landim" (vernacular, in Portuguese) is Ronga (Thonga) which is understood by most urban Africans in Lourenco Marques.

OUTLINE of map of MOÇAMBIQUE showing TRIBAL DISTRIBUTION.
Taken from "The Bantu-speaking tribes of South Africa"
edited by I. Schapera (for ethnological grouping of Southern Africa)

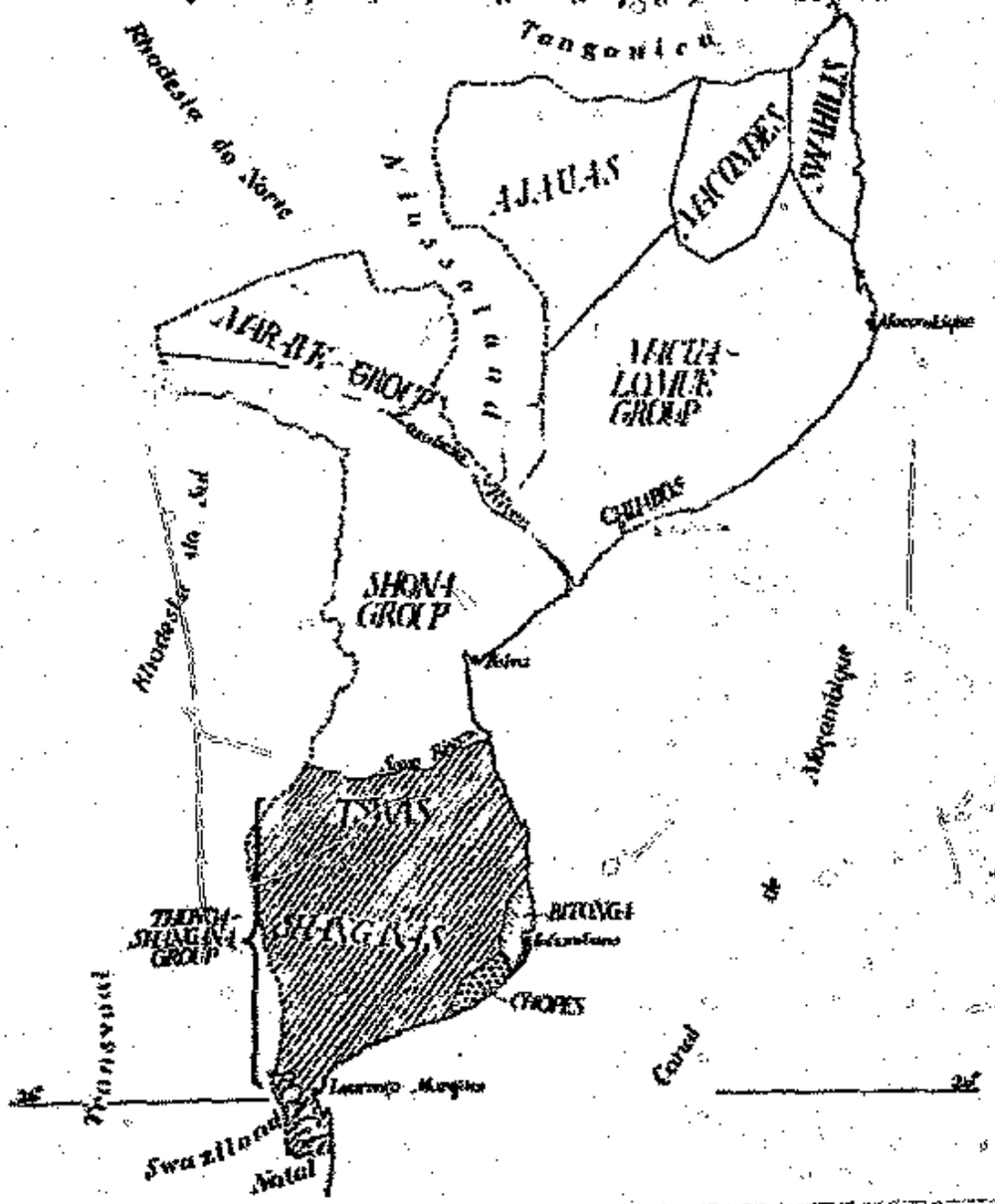

Fig. 11

RELIGION

Fifty-one percent of the sample in the middle zone declared themselves as Catholics, 23% as Protestants (this was not sub-divided), 4% as Moslems and 22% as having some other religion (African) or no religion. Among the protestants was the group of 24 "Zionists" (already mentioned) who belonged to an African "separatist" church.

Religion appeared to have no connection with tribal origin except that the Moslems came from the north of Mozambique (see Fig. 11). The high proportion of Christians in Lourenco Marques is an urban phenomenon. Official statistics (3) show that 52% of the population of Mozambique is recorded as having no religion or some "other" religion than Christian or Moslem, and of the remaining 17.4%, 10.6% are Moslems, 5.1% Catholics and 1.7% Protestants.

STABILISATION OR DURATION OF RESIDENCE IN URBAN AREA

African "outskirts" populations in their present stage of urbanisation, are far from stable as urban

communities, especially where only a relatively small number of those in the productive years are working in industry as a stabilised labour force, and where migrant labour is employed even in transport and other services, as is the case in Lourenco Marques. The question of stabilisation in such populations is complex. No intensive enquiry could be attempted on this subject because of the terms of reference which governed the research. It was possible to investigate only the duration of stay, in the defined area, of the bulk of the population.

The data relating to duration of residence give some indication that there has been a steady increase in the number of apparently permanent residents in the African population over the past 20 years, and that this has been accelerated for the 20 to 30 years age group in the past 5 or 6 years. There also appears to be a settling down of the bulk of the population, although the relatively small number of adolescents and of aged, as compared with young adults, is a complicating factor.

Duration-of-stay in an urban area as a measure by which to judge stabilisation for African "outskirts" populations, has the serious limitation that it does not reveal how long they are likely to stay. They may not

own land and build their own houses, and elderly people have not the means to pay rent in municipal or industrial townships.

Nevertheless, it is probable that the growth of population, the lack of development in agriculture or industry, in reservations, and the attraction of urban life with improved facilities and opportunities of employment, are resulting everywhere in Southern Africa in a steady movement of rural Africans to urban areas. More and more Africans are living "city" lives. Many children are being kept in town instead of being sent home to rural areas and thus know no other but an urban home.

In rapidly growing populations the large number of new arrivals over the short period tends to reduce the proportion of permanently settled residents to the total population, although the actual numbers of persons who have lived long periods or who have settled permanently in the urban area may have grown. In addition to this, aged persons, many of whom have spent the greater part of their adult years working in an urban area, return to their family, or tribal, homes in rural areas, to live out the span of their lives. These two factors taken together, or independently, diminish the average length of

stay for urban dwellers to an extent which can be ascertained only by intensive enquiry regarding the movements of the population.

For the purposes of the Cancer Survey it was required only that something should be known about the period of uninterrupted residence, in the defined area, of the population-at-risk to cancer, because this might have some bearing on the use of available medical services. Hospital statistics show that fewer women than men present themselves for medical treatment of all kinds, excluding those dealing with maternity, and it was desired to know 1) if the number of female patients was in proportion to the number of females in the population-at-risk; 2) if the women had spent fewer years than the men in contact with urban stimuli that might encourage them to use the medical services, or 3) if forces other than weight of numbers and length of stay in the environs of the city were operative in bringing more men than women to use the free medical services available to the African population.

Data analysed for Tables V and VI were extracted from a sub-sample of adults in the 21 area units in the middle zone. Information derived from the inner zone was not

TABLE V

LENGTH OF RESIDENCE - AGE - FEMALES

0.5	3.0	7.5	12.5	17.5	20	total
39	37	26	9	49	46	206
21	37	35	14	9	64	180
3	17	23	13	9	52	117
2	3	1	2	6	26	40
3	1	0	2	0	30	39
68	95	85	40	73	221	582

TABLE VI

LENGTH OF RESIDENCE - AGE - MALES

Age	0.5	3.0	7.5	12.5	17.5	20	Total
20	18	68	28	10	25	15	164
30	9	38	58	29	15	23	172
40	2	15	27	21	19	38	122
50	2	6	17	7	5	41	78
60	2	2	4	7	2	29	46
	33	129	134	74	66	146	582

FEMALES - Average Age 31.9 yrs.
" Length of stay 14.19 yrs.
MALES - Average Age 34.33 yrs.
" Length of stay 12.27 yrs.

included in this analysis because the population from that zone consists entirely of migrant labourers who, with few exceptions, said that their employers would send them to the State Hospital for medical treatment if necessary. The subject of duration-of-stay in the outer zone was not investigated because information from administrative sources revealed that the majority of the Africans in that zone had lived in the districts of Matola and Machava since birth. The question there was not one of immigration into those areas but rather of emigration from them especially in recent years, because Matola, particularly, is being developed as an industrial centre and an area of European settlement.

It was evident that irrespective of duration of stay in the defined area, the migrant labourers in the inner zone on the one hand, would use the medical services to a greater extent than the middle zone population while the dwellers in the outer zone, more stable but further away from the medical centres would, on the other hand, in spite of larger residence in the survey area, probably use such services to a lesser extent. As has been stated, the bulk of the population was situated in the middle zone and the enquiry regarding duration-of-stay had more

relevance to that section than to the inner and outer zone populations.

From the data in Tables V and VI there emerges the fact that more women than men have lived over 12½ years in the middle zone. The average age of the women (31.98 years) is almost 2½ years less than the average age of the men (34.33 years), but the average duration of stay in Lourenco Marques is 2 years more for women (14.15 years) than for men (12.27 years).

Hospital statistics compared with population estimates obtained in this survey, show that women do not use medical services in the same proportion to their numbers as do men, and from the data which gives the results shown in Tables V and VI, it may be concluded that long residence in the urban area does not necessarily result in greater use of the medical services than shorter residence or, alternatively, that men are more likely than women to use the medical services for reasons which are not necessarily associated with long residence in the urban area.

USE OF MEDICAL SERVICES

Because a Cancer Rate Survey requires that all cancers in the whole population of a defined area shall be registered, it is necessary to know the sources of cancer statistics and the extent to which the population-at-risk to cancer comes within the ambit of the available medical services where cases of cancer may be detected and recorded.

In the large cities and towns, and even in rural areas of highly developed populations with adequate medical services, the possibility of registering the number of cancer cases depends largely upon organisation. Therefore, if the co-operation of medical practitioners in private, or public, service can be obtained it should be possible to register almost 100% of the cancer cases that are treated by hospitals, outpatients' clinics, nursing homes or private doctors, as well as those that are discovered during surgical operations or treatment for other diseases, at post mortem examination and from official death certificates in cases which have not been hospitalised.

The under-developed populations, however, present

a problem in cancer detection. Modern medical services are less familiar to them and treatment may be avoided through ignorance or fear. Only if medical services are adequate for, accessible to, and used by, the population-at-risk to cancer can a statistical survey in cancer incidence be attempted. It is necessary, therefore, to ascertain, as far as possible, the extent to which such populations are likely to have cases of cancer detected, either by coming for medical treatment or by discovery after death.

In Lourenco Marques there are no African medical practitioners. Africans consult outpatients clinics of the State Hospital, and two small mission hospitals. A few seek treatment from non-African private practitioners but this number is small for economic reasons. Cancer cases are, with rare exceptions, sent to the State Hospital because of the expense and difficulty involved in treating them. In addition, an autopsy rate of almost 100% of African patients who die at that Hospital, ensures the registration of cases that might otherwise have been undetected. This centralisation of medical services facilitated not only the collection of cancer cases but also of data relating to the use of medical services. In question-

ing the respondents emphasis was placed on hospital attendance either as outpatients or inpatients.

More difficult to ascertain was the extent to which African medicine men ("nhangas") were consulted. As their activities are illegal in Mozambique they are consequently conducted surreptitiously. The "nhangas" have more, or less, influence over the townspeople according to the standard of development, or of education of these latter; the effect of religion on their attitudes and their experience of western medicine. Many Africans consult both a "nhanga" and a medical doctor at a hospital or clinic. The survey field workers, who know the population well, said that it was not uncommon for a "nhanga" to be consulted first in the case of a minor ailment, or in the initial stages of a major illness. Where no cure results, or the condition of the patient deteriorates, recourse is had to western medicine. These statements were verified by answers obtained in the questioning of over 600 cancer patients at the (State) Hospital Central Miguel Bombarda where cancer cases were hospitalised.

Nevertheless, the data relating to the "nhangas" is

suspect. It is probable that more respondents consulted a "nhanga" first and came eventually to a hospital, or clinic, than the figures in Table VII show. Further and more intensive enquiry would be necessary to arrive at any satisfactory conclusion on this subject. Table VII gives an analysis of where respondents in the middle zone say they would go first to seek treatment if sick. Only 6 males and 9 females in the sample of 2,642 admitted that they would seek the assistance of a "nhanga" first in the case of sickness. There were 15 males and 16 females who stated they would not seek any treatment at all but, of these, 12 males and 14 females were "Zionists" who stated that they were conscientious objectors to medical treatment. It is not known to what extent these latter might have resorted to the treatment offered by "nhangas" in times of stress. None of them was over the age of 30 years, and as they obviously live in clusters no valid conclusions could be drawn regarding their reactions to serious illness from only one cluster and they have been excluded from the estimates in Table VII.

The large majority of informants, 98%, stated that they would seek treatment first, at a hospital, a clinic

or a private doctor. Because the enquiry would almost certainly be known to emanate from the hospital, however, it was thought necessary to check the statement by asking if the respondents had ever been to hospital and if they would go voluntarily or only if obliged to do so. Table VIII gives estimates of the number of persons, male and female, who had never been to hospital compared with those who had been hospital outpatients, or inpatients, at some time in the past. From these estimates it appears that 83% of the population, males and females alike, had received some kind of medical treatment. The number of respondents who stated that they would seek medical treatment at a clinic or hospital if sick (see Table VII) was over 95%, excluding those who said they would see private doctors. It is probable that this figure is an overestimate, as not all persons who said they would seek medical treatment would, in fact, do so.

Nevertheless, it appears that over 83% of the middle zone population (two-thirds of the total number of Africans in Lourenco Marques) makes use of the available medical services. The percentage in the inner zone section is almost 100%, as has been mentioned. That for the outer zone (one-fifth of the total population)

is probably less than 83% because of the larger number of women in that area. However, as the concentration of heavy industry is also in the outer zone and men employed in industry are more likely than others to receive medical attention, because of special services (company doctors), this counteracts the deficiency to some extent when both sexes are taken together. At the same time, it must be noted that although the number of women patients at hospitals and clinics is almost equal to that of men, hospital records show that nearly 45% of women patients are maternity cases and this reduces the proportion of females to males as general cases, both as outpatients (when anti-natal clinics are excluded) and as inpatients.

Some enquiry into the reasons for the predominance of male patients over female patients coming for treatment is essential if medical statistics relating to the sexes are to be compared. It is clear that although the women say that, if sick, they would seek treatment at a clinic, or hospital, fewer of them do so in proportion to their numbers than men. It will be seen that the sex ratio is not a sufficient guide to the interpretation of cancer statistics as revealed by the

Rate Survey in Lourenco Marques.(6) The cancer rates show that at all ages the number of cases for males exceeds that for females but the predominance of males over females in the population-at-risk is confined almost entirely to the age groups in the 10 - 20 dicenium.

The sample survey provides evidence that a social factor is responsible if not altogether, at least in considerable part, for the sex difference in the incidence of liver cancer as between males and females, and that no valid conclusions can be drawn on the question of sex susceptibility without a more thorough examination of the facts.

Probable explanations as to why women do not use the medical services as readily as the men, are not hard to find when their social and economic status, their illiteracy and their general backwardness in western civilisation are examined. The extent to which these factors operate, however, must, in the absence of accurate information, include a considerable amount of conjecture and cannot fruitfully be discussed here.

TABLE VII

ANALYSIS OF WHERE RESPONDENT WOULD GO TO SEEK TREATMENT IF ILL

	No observed		Est. Total		95% limits	95% limits	
	M	F	M	F	M	F	
Hospital	656	561	16550	14150	15000-18100	12650-15650	
Clinic	613	682	15450	17200	13850-17100	15400-19050	
Private Dr.	47	37	1190	930	790- 1600	530- 1340	
Pharm.	6	9	150	230	15- 275	30- 420	
Scientists	12	14	-	-	-	-	This group obviously lives in clusters and nothing short of a complete census will give any reliable information
Others	3	2	-	-	-	-	Too small to estimate

TABLE VIII

HOSPITALISATION DATA

	No observed		Est. Total		Hospital Data 95% Limits	
	M	F	M	F	M	F
Never been to Hospital	232	202	5850	5100	4900-6800	4050-6150
Out-Patient	804	687	20280	17330	18550-22050	15700-19950
In-Patient	331	411	8350	10370	7450-9250	9300-11450

KNOWLEDGE OF DISEASE AMONGST AFRICANS

Under this heading all that was attempted in questioning the respondents was to discover, if possible, what knowledge they had of diseases that might respond to medical treatment. It was not expected that anything like an adequate answer to this question would be received and it was feared that the interviewers might waste time on it. They were given strict instructions, however, and as they were nurses and knew the names and symptoms of the diseases prevalent in the area, it was felt that they would be capable of finding out at least which disease was best known to the respondents and if there was any knowledge of cancer (tumours) as being a disease requiring medical treatment. It was later realized that this was too ambitious an aim considering the general ignorance of a largely illiterate population, and the inexperience of the fieldworkers. Consequently, the data collected on this question were not statistically analysed. It is of interest to note, however, that 75% of the adults questioned mentioned tuberculosis as a disease that required medical treatment, and that in a statistical enquiry on cases dying at the State Hospital,

tuberculosis proved to be the most frequent cause of death. Cancer (tumours) was named as a serious cause of illness by less than 4% of respondents in the survey, although it kills 1 in 5 of the patients who die at the Hospital.

PART IV

AGE STRUCTURE ON URBAN [illegible]TS

The relative proportions of the sexes, and of youth to aged in a population, are of particular interest not only to demographers, to economic and social planners, but to medical research workers. The cancer pattern and the age and sex structure of a population are closely related. Certain forms of cancer occur more frequently in older persons than in younger ones; others are found only in one sex, and yet others are correlated with occupation, or with social habits, like smoking, and so with age and sex. From the point of view of the cancer research worker, therefore, it is important to know the differences and the similarities that exist between various populations as to their age and sex.

Merely to recognise them is not enough; they must be understood and explained. There is, consequently, an urgent need for the review of demographic standards of comparison for African populations. Before this can be achieved, however, more will have to be known concerning urban Africans who do not fall into the category of

"outskirts" populations. There is little information on the subject. Reference made by Kuczynski to early studies in West Africa, for instance, reveals how scanty is demographic information regarding African populations and how suspect are census statistics for illiterate peoples.(7) In Central and West Africa, that is, North of Angola, the Rhodesias and Uganda, Africans have become urbanised under foreign, "European" influence but in conditions markedly different from those in Southern and East Africa (including the above-mentioned territories), where Africans have begun only recently to settle permanently, or semi-permanently, in segregated areas in what are regarded as "European" cities or towns.

The abnormalities arising out of the relatively large proportion of migrant labourers and the paucity of numbers amongst adolescents and aged in Lourenco Marques have been mentioned as characteristic of African populations that live on the outskirts of European areas. These features distinguish such populations not only from European populations in Africa and elsewhere, but also from other African populations living in African cities in other parts of Africa.

Banton's study of Freetown, in Sierra Leone, is of

interest because it describes African urbanisation of a type very different from that in Southern and East Africa. The presence of a relatively large number of children and of women, in proportion to men, and the absence of long term male migrant workers are distinguishing features of the Freetown population. Banton says: "Freetown does not draw migrant labourers from great distances. It has grown by the settlement in the town of persons from districts in relatively easy communication with the capital and this has meant a steady townward movement on the part of Protectorate women.

Here it becomes necessary to distinguish between two kinds of immigration: firstly, that of workers who come to Freetown, register for employment, and settle there; this may be referred to as urbanisation and is the most important of the labour movements in Sierra Leone. Secondly, there is that of seasonal migrants who come only for a month or two, having usually obtained a registration book on a previous visit".

The population of Freetown consisted, in 1953, of 650 Europeans, some 850 Lebanese and Indians, 17,000 Creoles (descendents of negro slaves) and 65,000 Natives.

Freetown is thus an African city and although there are a large number of different tribes amongst the native population, Banton finds that "shared economic interests do more than anything else to unify the population and to reduce differences" and, as a consequence, "compared with many African cities, the urban community in Freetown has developed to a notable extent".

This is in sharp contrast to the situation amongst urban populations in European cities, and towns in Southern Africa. In these areas land rights are restricted to Europeans and Africans pay rent in locations or townships owned or controlled by local or central authorities. European and African areas are segregated, one from the other, often by "buffer" zones and sectional, rather than general community interests are pursued on a racial or ethnic basis. Kinship ties with family members in tribal homes are maintained by Africans who are consequently slower than Europeans in becoming stabilised in urban communities. The return to rural areas of so many of the young and of the large majority of those who survive beyond 60 years of age is associated with this non-stability of Africans either as a consequence or a cause.

To illustrate the points which have been made here

the age distribution of the African population of Lourenco Marques is compared with the distribution for three urban centres in the Union of South Africa, namely, East London (Reader, 1955);[8] Johannesburg (Higginson and Oettlé, 1954)[9] and Durban (Kuper et al., 1957);[10] and for the Rhodesian Copperbelt populations of Luanshya, Ndola and the Roan Antelope Copper Mine (Mitchell, 1954).[11] Studies in these areas were undertaken with different purposes in mind and as a consequence, the demographic data have not been presented in a strictly comparable manner. Nevertheless, it has been possible to extract the figures which are given in Table IX for comparative purposes.

The African urban population of Johannesburg is 478,464 excluding mine labourers, who live in compounds on mine property, are segregated from the general community and are thus not an integral part of the urban population like other migrant and semi-migrant labourers who live in the townships on the urban outskirts. Mine labourers are not permitted to bring wives and children to live with them as they are in the Copperbelt of Rhodesia. Higginson and Oettlé excluded the mine labourers from their Cancer Rate Study of urban Africans

TABLE IX

City	Size of Population	Sex Ratio Males per 100 Females	Year	Distribution by 3 age class: Under 15 years		15-[illegible] yrs.		65 years +	
				M	F	M	F	M	F
Lourenco Marques	103,050	126	1957	32	37	66	61	2	2
East London	62,880	97	1955	43	39	56	59	1	2
Durban	136,279	218	1[illegible]	12	26	87.5	73.5	.5	.5
Copperbelt	-	128	1951	[illegible]	41.1	70.6	58.9	.40	.0
Johannesburg	478,464	126	1954	21	30	77.5	68	1.5	2
Johannesburg	500,164	136	1954	19.3	30	79.4	68	1.3	2

This Table shows the age and sex distribution in three main classes for Lourenco Marques, the three South African cities and the Rhodesian Copperbelt townships.

in Johannesburg, because environmental conditions which apply to them are different from those which apply to the legitimate urban population. The inclusion of 21,700 males between 18 - 45 years of age gives a total population of 500,364 for Johannesburg and an age distribution which shows a diminished proportion of youth and aged to the total. The overall sex ratio is increased from 126 to 136 males per 100 females. It should be noted that not all of the 35,000 mine labourers in the Johannesburg city area are included in this distribution. Just over a third of them are foreign, East Coast and Tropical, immigrants who have been excluded from the total in Table IX to demonstrate that they are not responsible for the abnormal age structure of Johannesburg, but serve only to accentuate it.

In all five populations the small proportion of persons over the age of 65 years, is immediately apparent as is the similarity in age structure, with variations for Lourenco Marques and East London where there are larger proportions of children. It will be seen that, on the whole, there are more female than male children and more adult males than adult females, except for East London, and that the overall sex ratios indicate large

proportions of males in relation to females. In Durban the grossly abnormal age structure is attributed by Kuper et al.(10) to the high proportion of male migrant labourers in the productive years between 15 and 64. This is obviously the case also in Johannesburg and the Copperbelt, where large numbers of male labourers are required in heavy industry. The numbers of female migrant domestic and other workers in South Africa, however, lower the ratio of males to females and give an impression of stability which is not as real as it is apparent. This is particularly noticeable in East London. In Lourenco Marques the situation is quite different as there are few female migrant workers and most women live in family groups of one kind or another.

The age structure for the Copperbelt does not bear witness to Mitchell's statement that "a community with few personal ties in the rural areas is rapidly developing on the Copperbelt". Mitchell's figures show a considerable excess of female over male children whic suggests that young boys are sent home to tribal areas on the Copperbelt as they are in South Africa. The proportion of old people is the smallest for any of the areas which are noted here and the marked predominance of males in

the upper age groups indicates that many men do not have wives living with them in the Copperbelt townships. The age and sex structure, in itself, is no index of rapid development, but rather of a stage of development which is not very different from that of Johannesburg, although it holds greater promise of urban stabilisation because the women are wives of the men and not migrant labourers themselves.(11)

Abnormal age structure is not peculiar to South Africa but is reported also from East Africa where Africans live in industrial townships like Jinja in Uganda (Cyril and Rhona Sofer).(12) Unfortunately, exactly comparable age classes are not available for Jinja, but it can be seen that the age and sex composition of the African section of the population is similar to that of the industrial towns of Southern Africa. In Jinja 26.9% of African males and 28.1% of females are under 16 years of age; 75.6% of males and 67.1% of females are between 16 - 45 years, and only 7.5% of males and 4.8% of females are over the age of 45 years. The sex ratio for Jinja is 185 males per 100 females and the excess of female over male children is indicative of a return to tribal areas of male children comparable with that in South

Africa.

A contrast to this back and forth movement from rural to urban areas, is found in Freetown. Banton states that in 1953, out of every 100 persons 36 were adult males, 33 adult females, 14 male children and 17 female children, persons over 16 years of age being counted as adults in Freetown as they are in Jinja. As large numbers of children, who come for schooling to Freetown, live there without their parents, however, the proportion of adults to children seems considerable and may be an indication that old people without children, make up a larger proportion of the population than they do in Southern and East Africa. It is to be regretted that Banton makes only brief, and indirect, reference to the proportion of aged in the Freetown population when he quotes the report on Malaria in Freetown and District (Medical Department Paper No.1, 1946): "This report gives ... approximate percentage age distribution of the population as follows: 0 - 10, 18%; 10 - 20, 20%; 20 - 30, 25%; 30 - 40, 17.5%; 40 - 50, 3.2%; 50 - 60, 4.5%, but the basis of calculation is not stated".

Whatever the basis of calculation, the figures quoted in this report are difficult to accept. The

increase in the 10 - 20 years age group over that for 0 - 10 years may be explained by the influx of children to attend school in Freetown. Satisfactory explanations for the increase in numbers over the age of 50 and for the abnormally high percentage (60%) over 60 years are hard to find, however.

This lack of comparative demographic data is unfortunate as conditions of urbanisation in Freetown are obviously different from those in Southern and East Africa. It is not difficult to imagine that where Africans may enter an urban area and settle permanently in it, urban development will proceed in a manner which is widely different from that in Johannesburg, Durban, the Copperbelt and Lourenco Marques. Age and sex structure for African cities in such circumstances would be interesting to observe.

INDUSTRIALISATION AND THE SEX RATIO

The migrant labour system is a demographically and socio-economically disrupting influence all over Southern Africa and there are concentrations of able-bodied African males in most of the large urban areas. With increasing

urbanisation, however, more and more African women are moving into the cities and there is a tendency towards stabilisation of the labour force and of the population as a whole. There is also a movement towards parity of the sex ratio.

This latter trend in South African cities has been said by Huper et al. to be the result of industrialisation.(10) The Union Government Census Report (51/1941 pp. 78 et. seq.) is quoted in support of this statement. In urban, for example, the sex ratio of 6.26 in 1921, was reduced to 2.66 by 1946 and 2.18 by 1951. However, an examination of the overall sex ratio for Lourenco Marques (1.26) and of Freetown (almost 1.00) shows that a low sex ratio is not necessarily coincident with industrialisation.

The overall sex ratio in an African population is often misleading as an index of industrialisation or of stability. With fewer male children and adult women, than female children and adult males, a population may have an almost equal number of both sexes when all age groups are taken together. Adults may nevertheless have amongst their number large proportions of migrant workers of both sexes who are not married to each other or

living together. These workers are usually separated from their children and, in the case of the men, also from their wives - the women and children living in rural areas.

Reader reports a practice of sending young girls from the city to nearby rural homes "to protect their virginity" and this would account for the excess of boys over girls under 15 years of age in East London. In Lourenco Marques few women go out to work as they do in East London. Urban life is less sophisticated and the young girls are kept with their mothers. Boys, however, are sent home for initiation and to help to do the work of men who are absent from the rural areas.

It will be seen that the sex ratio for the population as a whole does not necessarily reflect the extent of urban stabilisation or of industrialisation. An accurate picture of the balance between the sexes can only be obtained by a comparison based on age groups supplemented by information regarding the extent to which the sexes are paired or living together.

An examination of the economic activity of women in Lourenco Marques serves to emphasise that industrialisation in this area has played little direct part in the urban-

isation of women. Lourenco Marques has but recently begun to develop industrially and even light industries (with rare exceptions) employ only men. It is not known exactly how many women are employed in industry in the city of Lourenco Marques, but that there are very few is evident from figures taken from the 1950 Census Report for Mozambique (pages XIV/XV). See Appendix III. From these tables it can be seen that female workers constitute less than one-tenth of the working population, and that less than 5% of the total working population is employed in industry. Of the 73,168 who make up this 4½%, only 989 are women. Less than one-eighth, or 9,024, of the industrial labour force is resident in the district of Lourenco Marques.

This situation has altered to some extent in 10 years with the development of the cashew nut industry in which women are employed in breaking cashew nuts by hand. Nevertheless, even today comparatively few African women in Lourenco Marques are remuneratively employed in any field of work, and only 1% of them between the ages of 15 and 64 years are in domestic service. This small number of migrant women workers (Fig. 10) is in sharp contrast to the considerable number of such workers in

South Africa where the large majority of domestic employees are women. In East London, for example, 42% of women between the ages of 15 and 64 years are gainfully employed, 96% of them in domestic service.(13) Women have come to stay in the urban area of Lourenco Marques for reasons other than work-seeking, and from the evidence available in Tables V and VI, appear to have lived in town for longer, uninterrupted periods, on the average, than the men.

The presence of the large proportion of women to the total population in Lourenco Marques, as compared with a city like Durban, needs to be explained on some basis other than that of industrialisation. Furthermore, striking differences exist in socio-economic background between Johannesburg, the most highly industrialised city in Southern Africa, and Lourenco Marques. Yet, the sex ratios (1.26) for the two cities are the same when the mine labourers are excluded from the Johannesburg total; and their age structures are similar.

It is apposite to mention here that in spite of their illiteracy and lack of remunerative employment, and even without formal marriage, the women in Lourenco Marques represent a stabilising force in the urban area.

While there are a substantial number of young women in the productive years settling in the urban area, not as migrant workers but as urban housewives, the propo- n of youth to aged in the population will increase - at least while the population remains in its present relatively unindustrialised state.

Little is known about population development for urban Africans, however, because factors responsible for maintaining a migratory labour system have precluded urban stabilisation. Nevertheless, the available evidence at least for Lourenco Marques, Durban, Johannesburg and the Copperbelt shows that there has been a growing tendency, even in little-industrialised areas like Lourenco Marques, for Africans to migrate from rural to urban areas and to stay in them for increasing periods of time, and even permanently. With stabilisation a change in age composition has occurred in populations which are now called developed and predictions may be made regarding future trends which may be expected in such populations, but predictions of this kind are obviously not possible for African populations at the present time.

YOUTH OR AGE OF AFRICAN POPULATIONS

When the relative youth or age of African populations is examined it may be seen that the youthfulness of the African populations is, in part, a consequence of their [illegible] of aged persons in comparison with children and young adults. This is a situation which has two main causes.

The first is medical. The expectation of life is [illegible] the ageing process accelerated in the African, whose premature senescence and shorted life-track have been demonstrated by Gillman and Gillman in their work on human malnutrition, (1951).[14] Improved medical services have brought about a decline in mortality rates, especially in preventable diseases, but they have not yet been sufficient in African urban populations to counteract the long term effects of malnutrition which are carried forward from one generation to the next.

The second is socio-economic, and is associated with the emigration of the aged to spend the terminal years outside of the urban areas. Although this emigration is not peculiar to African populations, the retirement from large cities to smaller conurbations, villages and rural

areas, clearly occurs on a larger scale for Africans than for Europeans.

There is no material available to indicate what African age structure in urban areas would be if this emigration did not take place. Medical reports have shown that there is a considerable difference in mortality rates between Europeans and Africans; social surveys in Johannesburg, Durban, East London, Lourenco Marques have confirmed that many Africans return to rural homes in old age; but the extent to which the shortened life-track on the one hand, and the retirement from urban areas on the other, bring about the abrupt reduction of numbers in the older age groups of Africans, is only known for the two factors operating together. They have yet to be separated and this is one of the problems for medical research in African outskirts populations.

Apart from biological ageing as shown by Gillman and Gillman in cases of malnutrition, Africans are aged also in a sociological sense by a system under which they leave school at an early age, if they have attended at all, are often gainfully occupied before the age of 15 years and, because they are largely manual workers, are seldom found in employment over the age of 60. This

is different from the changing pattern of education and employment in more developed populations where education and training are prolonged as in the United States of America and where, in addition, the age of retirement from employment is raised, as for example, amongst the whites in Southern Africa. The trend in the United States is towards the inclusion of the 15 - 20 years age group with the minors, while the numbers of the aged will be diminished by the incorporation of more persons between 60 and 65 years, in the age class of the productive years, to counteract the present early retirement of industrial workers.

Changes of this kind are occurring, with industrialisation, in some urban areas even in Southern Africa, as witnessed by Reader in East London, where young Africans over 15 years of age are beginning to find difficulty in competing with older persons for employment in industries for which certain skills are needed. More years of training and/or experience are now required by the youth before they can undertake productive work. Without such training they tend to become unemployable in industry and so, like many of the youth in more developed populations, are perhaps wrongly placed in the productive years age class.

In areas like Lourenco Marques, however, there is, as yet no noticeable change in this direction. On the contrary, a low standard of literacy, lack of training for industrial, or other, employment and the use of young males as domestic workers tends to bring about a reduction in the dependent youth class and a corresponding increase in the productive age class - especially in the "urban" area where 1 in 16 or just over 6% of the domestic workers are boys (and a few girls) between the ages of 10 and 15 years.

The question which is posed here is: what is meant by "youth" and "aged" as applied to population groups and can these classes be defined by age so that valid comparisons between African populations and those of Western European origin, may be made in studies of population development or of medical research? The answer seems to be that if such comparisons are made on the present standardisation of age classes defined for the Western European type of population, they will give an erroneous picture of the differences and the similarities between such populations and African populations.

CONCLUSIONS

The conclusions which are drawn from the results of this study relate partly to the method of the enquiry and partly to the demographic data which were the main finding. The population estimates with age and sex distribution have been examined in the light of knowledge acquired during the process of investigation. The method of investigation has proved useful in that it has not only obtained the required population estimates, with age and sex structure, but has opened a new field for research in a previously untouched area.

The difficulties encountered in the Sampling of the scattered population living on the outskirts of Lourenco Marques, are probably to be found elsewhere. The techniques devised to overcome them may therefore be of interest for comparison with methods used in similar circumstances for other populations. Consequently, these techniques have been described in some detail. A note which must be added is that the use of aerial photographs as a sampling frame was made effective by securing from the outset of the survey, expert statistical advice for problems which were best dealt with by a specialist.

The importance of early consultation regarding the statistical aspects of a survey of this nature cannot be over-emphasized. Where resources are limited statistical requirements may be met by careful and timely planning which will eliminate errors and avoid waste.

Statistics give an end result. All the factors leading up to this result can only be discovered by intensive research which is necessary for interpreting quantitative data. The whole pattern of life of urban Africans in Lourenco Marques has not been investigated in this survey nor is it described in the material which is presented here. Nevertheless, the facts which are known are sufficient to explain the abnormalities in the age and sex structure of the population. This age and sex structure places the Lourenco Marques population in the category of African populations that live under a system of migrant labour. This is of particular importance to the understanding of the incidence rates for cancer of specific sites and age groups in Lourenco Marques. However, further information regarding the extent to which Africans migrate to and from urban areas, will be necessary before differences in cancer incidence for urban areas will be fully appreciated. This applies to

differences between African and European populations in the same urban area and between African populations of different urban areas. Such information is not yet available and in view of the present instability of African urban populations will be difficult to ascertain - at least for Southern Africa. In a pioneer study on culture contact between Africans and Europeans in the urban area of Johannesburg, in 1935, Hellmann pointed to the effect of kinship ties maintained by Africans in urban areas with their families in tribal homes in rural areas (16).

Evidence from Johannesburg, Durban, East London, Jinja, the Copperbelt of Rhodesia and Lourenco Marques shows that these ties between urban and rural Africans exist on a large scale even today, although it appears that more Africans are living for longer periods than hitherto, in European urban areas and that more of their children are born in the cities and towns.

Any estimate of the degree of urbanisation of an African population living on the outskirts of a European urban area probably depends upon the observation of the movements of at least two or three generations to and from that urban area. There is, however, no precise

knowledge regarding such movements of Africans in and out of urban areas. Under present conditions the intention of Africans to remain in urban areas to which they have migrated, does not mean permanent residence there. Table IX shows that Africans in the older age groups, that is, beyond the productive years, are found in very small numbers in European urban areas. Their disappearance from the urban scene either through death or through migration back to rural homes, added to their previous temporary absence during adolescence, leaves a gap in knowledge - a gap which will have to be closed before satisfactory comparisons can be made in medical studies between populations which are permanently urbanised and those which have a dual environmental background.

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APPENDIX I

AERIAL PHOTOGRAPHS OF LOURENCO MARQUES (FILM 194A & 195) USED FOR SURVEY JUNE/JULY 1957

Photograph	Digits (weighted) for density	Numbers		Sample
122	10	0	99	
120	8	100	179	120
105	8	180	259	105
118	7	260	329	
124	7	330	399	124
101	6	400	459	
86	6	460	519	86
159	5	520	569	
155	5	570	619	
103	5	620	669	103
84	5	670	719	
205	4	720	759	
153	4	760	799	153
207	3	800	829	
126	3	830	859	126
88	3	860	889	
99	2	890	909	
82	2	910	929	
209	1	930	939	
157	1	940	949	
214	0.9	950	958	
223	0.7	959	965	
221	0.7	966	972	
107	0.4	973	976	
219	0.3	977	979	
211	0.3	980	982	
109	0.3	983	985	
161	0.1	986		
90	0.1	987		
		988		

APPENDIX IIa

CANCER RESEARCH UNIT

LOURENCO MARQUES - SURVEY

Ref: Area/Block:_____
Munti/No.:

Interviewer:_____ Date of Visit:_____ Checked by:_____

I. COMPOSITION OF MUNTI: NAME OF HEAD:_____

Index No.	Name	Relation to head a)	Sex b)	Age c)	Status d)	Race e)	Tribe f)	Religion g)	Duration of residence in L.M.(h)	Remarks

APPENDIX IIb

CANCER RESEARCH UNIT

LOURENCO MARQUES - SURVEY

Ref: Area/Block:_____
Munti/No:

erviewer:_____ Date of Visit:_____ Checked by:_____

DATA CONCERNING TREATMENT OF DISEASE:

	For what sickness do you go to Nhanga	Whom do you consult first when sick?				Have you been to hospital?		Would you go to hospital?		What diseases do you know that need treatment.
		Nhanga	Clinic	Doctor	Hospital	In-Patient	Out-Patient	Voluntarily	Only if obliged	

APPENDIX IIIa

Branches of Activity	Total	Agri-culture	Fishing	Com-merce	In-dus-try
TOTAL	1,633,598	1,241,868	15,318	12,072	73,168
L.Marques	62,212	19,148	1,246	1,929	9,024
Gaza	194,995	118,992	265	787	1,937
Inhambane	168,074	116,819	1,430	142	1,702
Beira	200,419	129,213	1,038	2,708	23,588
Tete	83,676	56,726	75	130	1,168
Quelimane	303,674	246,066	3,220	3,803	20,078
Nampula	401,285	355,202	6,007	2,033	11,927
Cabo Delgado	154,523	142,017	1,819	446	3,124
Lago	64,740	57,685	218	94	620

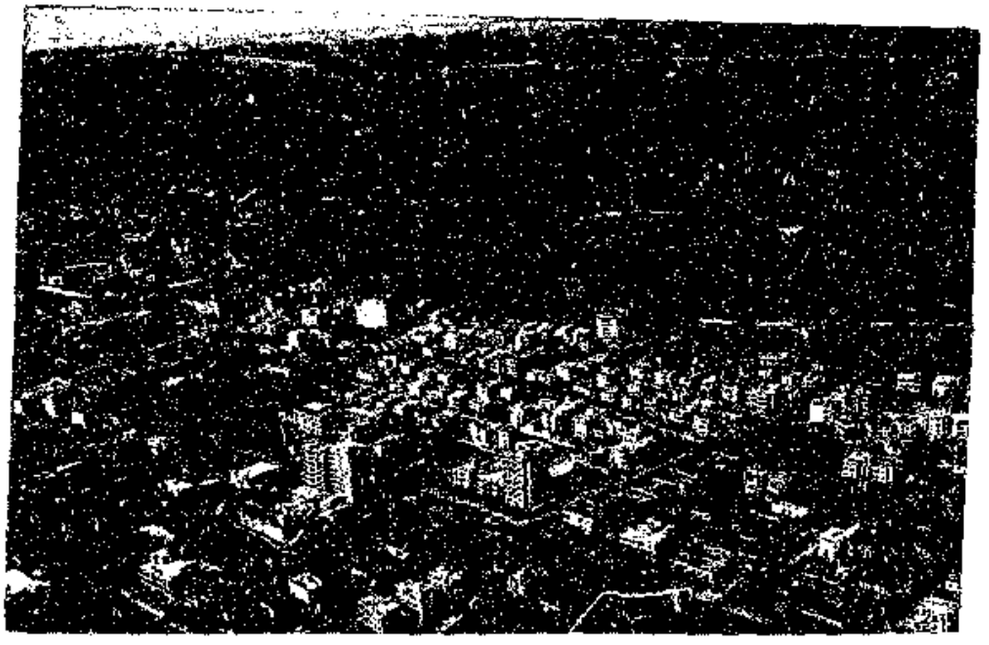
	Mines	Public Works & Const.	Trans. & Comm.	Domest. Services	Ser. of Gen. Int.	Serv. Out-side the Prov.
TOTAL	1,668	16,896	9,418	61,297	45,530	156,463
L.Marques	276	2,175	2,825	13,610	4,780	7,199
Gaza	37	371	477	5,077	2,444	64,606
Inhambane	10	318	152	2,356	1,606	43,539
Beira	78	3,350	3,935	14,924	6,136	15,389
Tete	602	671	389	1,829	3,862	18,224
Quelimane	177	3,918	663	13,373	6,879	2,567
Nampula		4,714	783	7,964	11,949	796
C. Delgado	2	1,116	135	1,693	3,666	505
Lago	486	263	59	441	1,148	3,728

APPENDIX III b

BRANCHES OF ACTIVITY

	Total		%	
	MF	M	MF	M
Agriculture	1,241,868	1,097,078	76.0	73.9
Fishing	15,318	15,300	0.9	1.0
Commerce	12,072	12,005	0.7	0.8
Industry	73,168	72,179	4.5	4.9
Mines	1,668	1,656	0.1	0.1
Public Works & Constructions	16,896	16,882	1.0	1.1
Transport & Communications	9,418	9,408	0.6	0.6
Domestic Services	61,197	58,879	3.8	4.0
Services of General Interest	45,530	45,367	2.8	3.1
Service outside of the Province	156,463	155,389	9.6	10.5

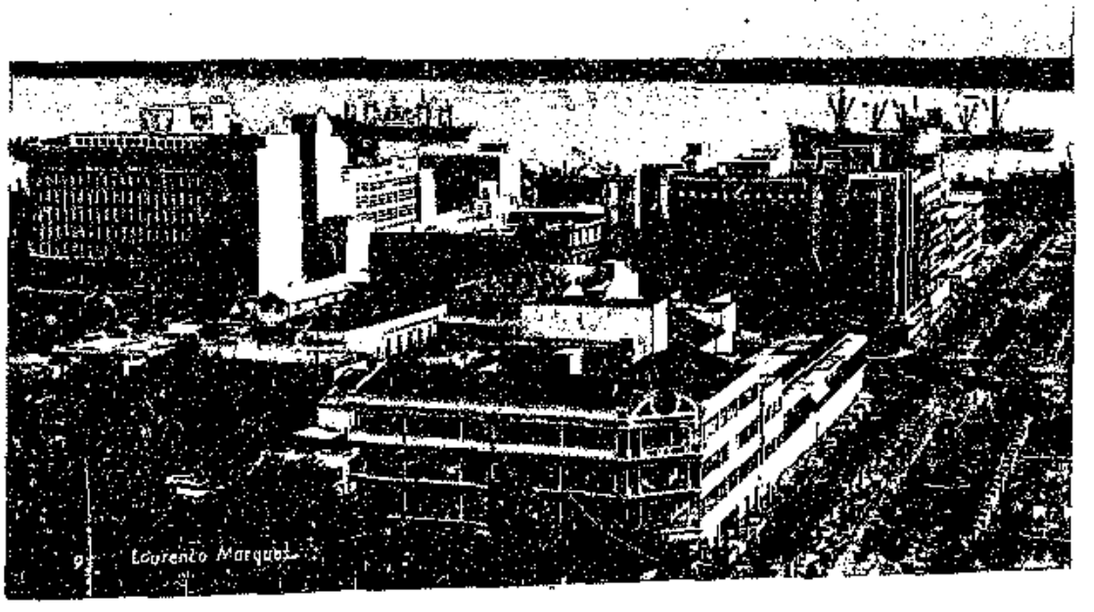




"The city lies in flat sandy country on the estuary Espirito Santo."



European residential area inner zone.



Shopping centre inner zone .



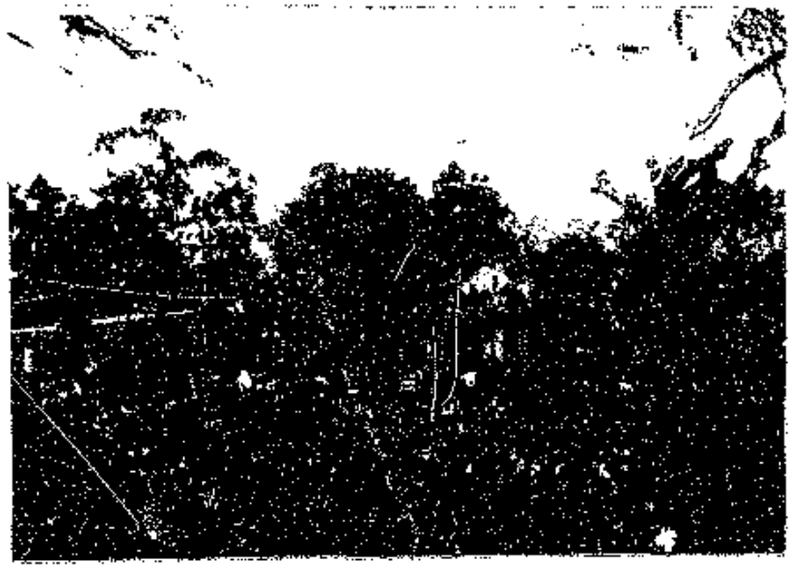
Street scene middle zone



Market middle zone



A tailor's house middle zone



Munti on outer edge of middle zone



Paths separating Munti



Couple beside reed fence surrounding their Munti



Women and children collecting water



Elderly widow selling tobacco, foodstuffs.
(outside shop beside market)

Author Flegg Hilary
Name of thesis Age Structure In Urban Africans In Lourenco Marques. 1961

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