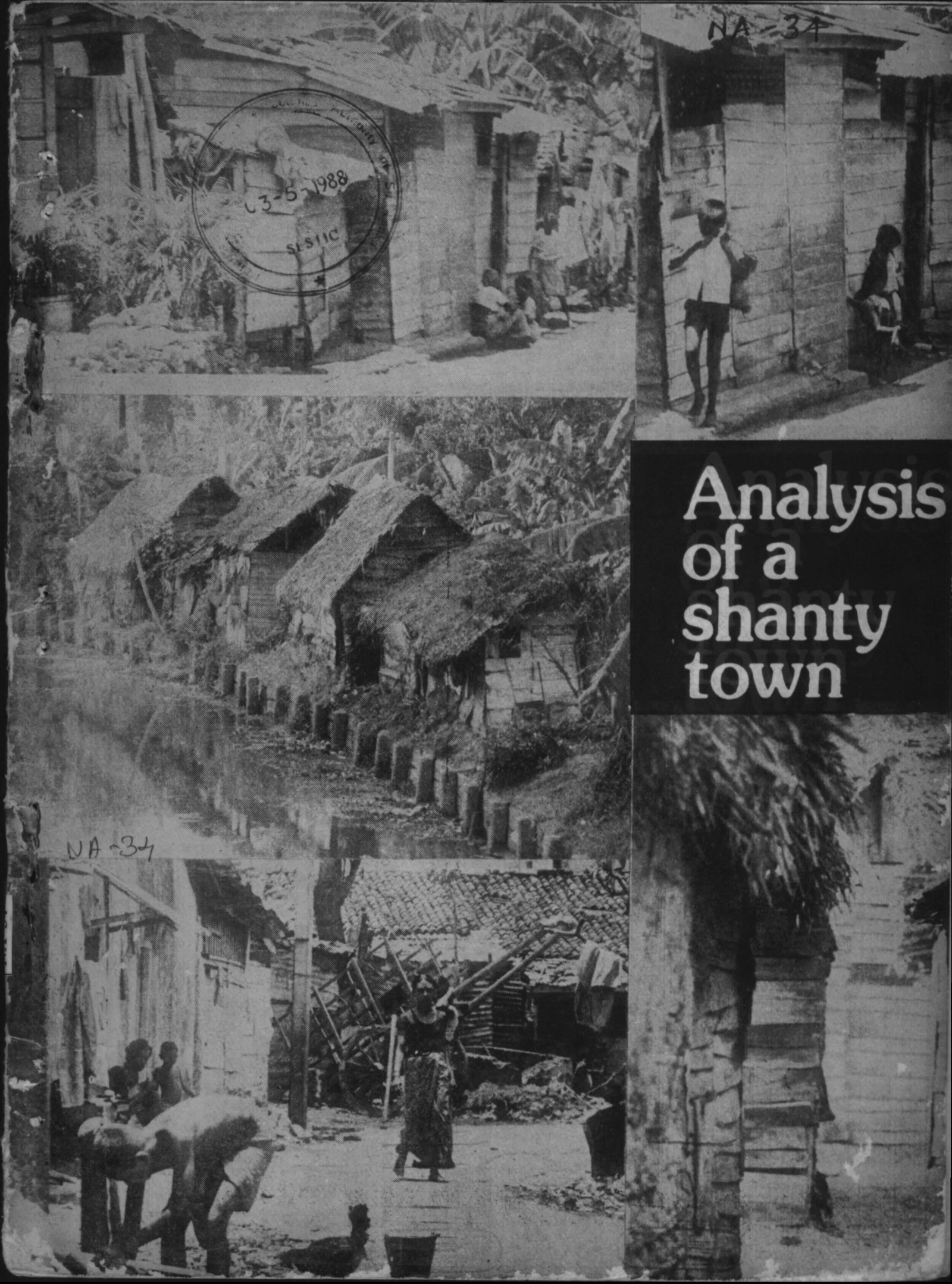

Analysis of a shanty town

ANALYSIS OF A SHANTY TOWN

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PREFACE

This is the second of three documents reporting studies of Shanty Towns in Colombo under the title "Design for low-cost living".

The first document, "Portrait of a shanty town", was published in May 1976 and showed maps of areas of a shanty town and plans and sketches of a selection of houses.

This second document, "Analysis of a shanty town", discusses the maps, plans and sketches in "Portrait" and then reports the results of a detailed questionnaire survey.

The third document will be entitled "Future of shanty towns" and will report a Colombo-wide survey carried out in 1976, discuss the role of these towns in the development of the City and make planning proposals.

ACKNOWLEDGEMENTS

This study is part of a Research Project under the general title "Design for low-cost living" which is supported by the National Science Council of Sri Lanka.

The introductory work was carried out in June 1973 by M/s. T.K.N.P. de Silva, Sunil Amendra, R.A.Jayasinghe, S.W.P. Agalawatte, A. Piyasiri, B. Premaratne and Miss Iranganie Gunawardane, while they were Post-graduate students and engaged on a Project entitled "Patterns of Living".

The remaining survey work was carried out by Mr. & Mrs.T.K.N.P. de Silva and Mr. & Mrs. S.Amendra, Architect's Consultancy Group, State Engineering Corporation, by Mr.R.E.Abeysekera, Mr.G.K.S.Jayasena and Miss M.A.G.Cooray of the Chief Architect's Department, Department of Buildings, by Mr.C.U.Gunawardana and Mr.G.Jayaweera of Justin Samarasekera Associates, Architects, and by Mr.K.R.Abeyratne of the Department of Architecture, Katubedda Campus, between October 1975 and February, 1976.

All local arrangements and local assistance for the survey were made available by Mr.T.Weerasinghe, Electrical Division, State Engineering Corporation.

The inhabitants of Wanathamulla Shanty Town co-operated in every way and willingly allowed their homes to be measured and sketched and answered many questions.

Aerial photographs and enlargements were specially prepared by the Air Survey Section of the Government Survey Department.

The survey results were analysed by computer with the assistance of Mr.K.Abeyratne of the Department of Architecture and the staff of the Computer Centre at Katubedda Campus. Further analysis and preliminary drafting of the survey results was carried out by Mr.N.Manoharan, formerly a Post-graduate student.

The cover design was by Mrs.S.Tidball, formerly of the Department of Architecture and of the University of Nebraska, USA. Photographic work, final editting and publication has been carried out by Mr.S.G.Weerasooriya and Mr.K.Abeyratne of the Department of Architecture.

Further copies of this booklet and "Portrait of a shanty town" can be obtained at Rs.20/- each from the Department of Architecture. Cheques should be made payable to "The National Science Council of Sri Lanka" and crossed.

INTRODUCTION TO THE SHANTY TOWN

The first investigation of Wanathamulla Shanty Town was a part of a study of various living patterns around Colombo. In addition to visiting a number of houses, discussions were held with various people concerned with the Town. These included the local M.P. and City Councillors, the headmaster of the school, the police, the co-operative store manager, the health visitor , the Government and Ayurvedic (local medicine) Dispensary staff and the Buddhist Priest.

The picture that emerged was of a very diverse society, mostly poor but some better off people living in Wanathamulla by choice, of inadequate but tolerable conditions except during heavy rain and flooding, of children missing school through lack of dry clothing and the need to earn, of no more vice or illicit activity than in many other places and of a generally cohesive community. The popular picture of degredation and squalor often reported from other countries did not apply here although, clearly conditions could and should be improved.

It was decided to base a more rigorous study on Wanathamulla in an attempt to describe living conditions more accurately and so to lay a foundation for wider studies and more informed policy-making.

LOCATION

Wanathamulla Shanty Town is probably the largest and oldest in Colombo. It is situated between the Prison on Baseline Road and the Oval Cricket Ground on the eastern edge of the City near low-lying marshland.

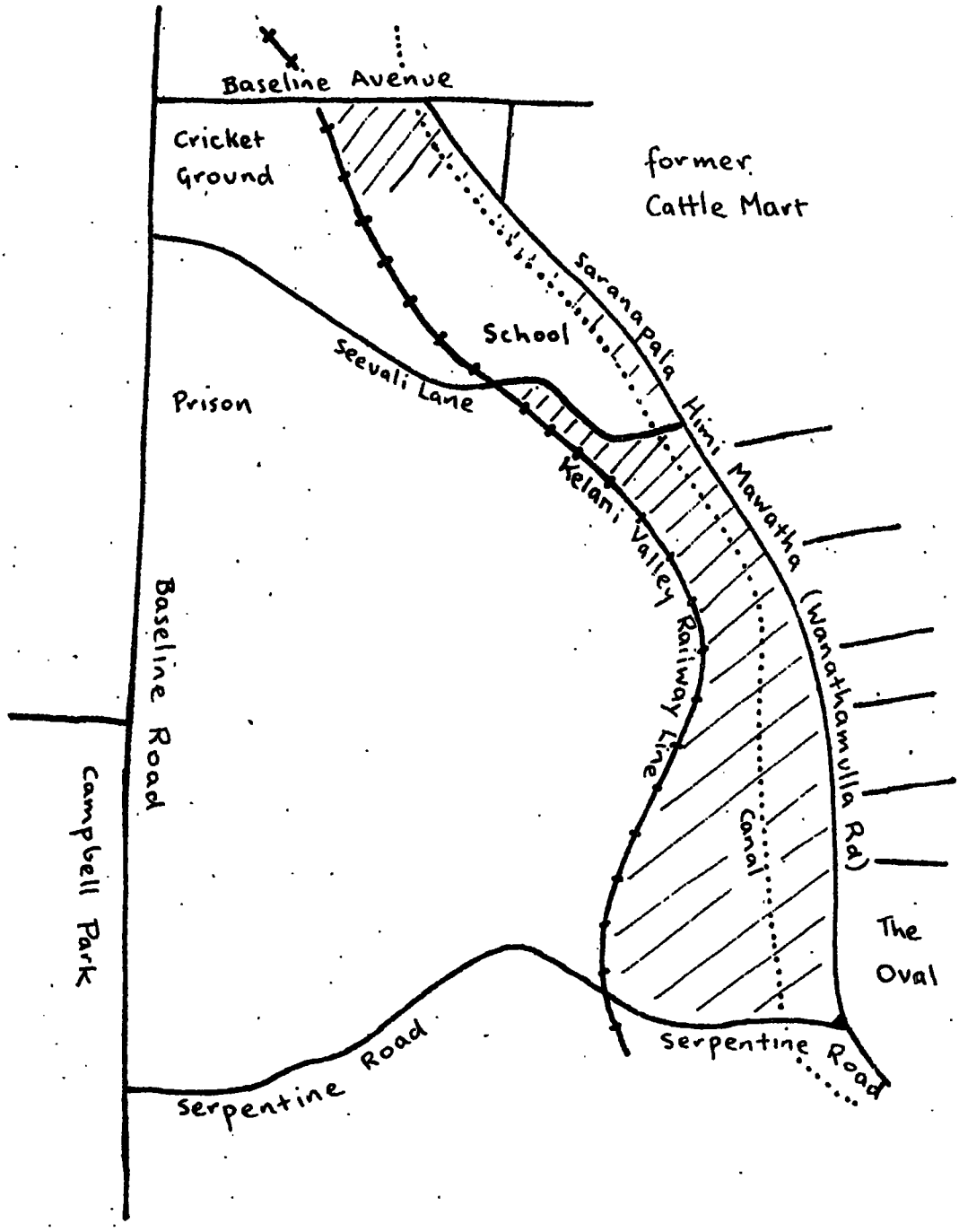
The area studied in this Analysis is shown shaded in Figure 1. It is a long narrow strip between the Kelani Valley Railway Line and Wanathamulla Road with a sluggish drainage canal running through the middle. From Baseline Avenue in the north to Serpentine Road in the south is about 1 Km (about 2/3 mile) but the average width is only 200 metres (200 yds). A school occupies a quarter of the area in the northern section and was excluded from the study. The former Cattle Mart in the north-east corner is also a large shanty area and a few shanty houses also extend along Seevali Lane to Baseline Road. There are multi-storey flats south of Serpentine Road and north of the oval, a variety of other housing, a number of Government Departments and marshland nearby.

The area is close to busy markets at Dematagoda and Borella and within 3 miles of the City Centre, the Harbour and the Pettah Markets.

This town is of particular interest because it has had a generation in which to reach a fairly stable and cohesive state and may therefore reflect the situation towards which other shanty areas are heading in the future.

Figure 1

Location of Wanathamulla Shanty Town



GROWTH

The growth of the Shanty Town has been traced using enlargements of air survey photographs taken in 1956, 1960 and 1971. Figure 2 compares the land occupied by housing at these three dates.

The land was "filled" manually and raised above marsh level just before the 1956 photograph was taken. It shows the land bare of housing or vegetation exeept for a small section in the south-west corner and around the school. In the following 4 years, nearly all the filled land was occupied. The only land unoccupied was near the canal (and liable to flood), near the railway (railway property) and near the south-east corner (and therefore likely to be developed). By 1971, even these areas had been largely built on.

The three sketches in Figure 3 are based on the three aerial photographs. They attempt to compare the nature of the land use at these three dates. The first shows the bare filled land with just a few trees by the road and railway and a little vegetation near the canal. The second sketch shows groups of houses and areas of open space with some vegetation. In the third, there are many more houses, large palm and other trees and a profusion of banana trees and shrubs. The canal, shaded dark, has been straightened with a section to the left to take extra water at flood time and then, further left is a flood prevention bank. There is still some open space within the shanty town and land near the railway is still free.

About 400 houses can be counted in the 1960 photograph. It is not possible to cover the houses accurately in the 1971 photograph because trees and shadows obscure so many but 460 were counted and a further 140 were estimated to be hidden.

Figure 2

The land occupied by housing in 1956, 1960 and 1971

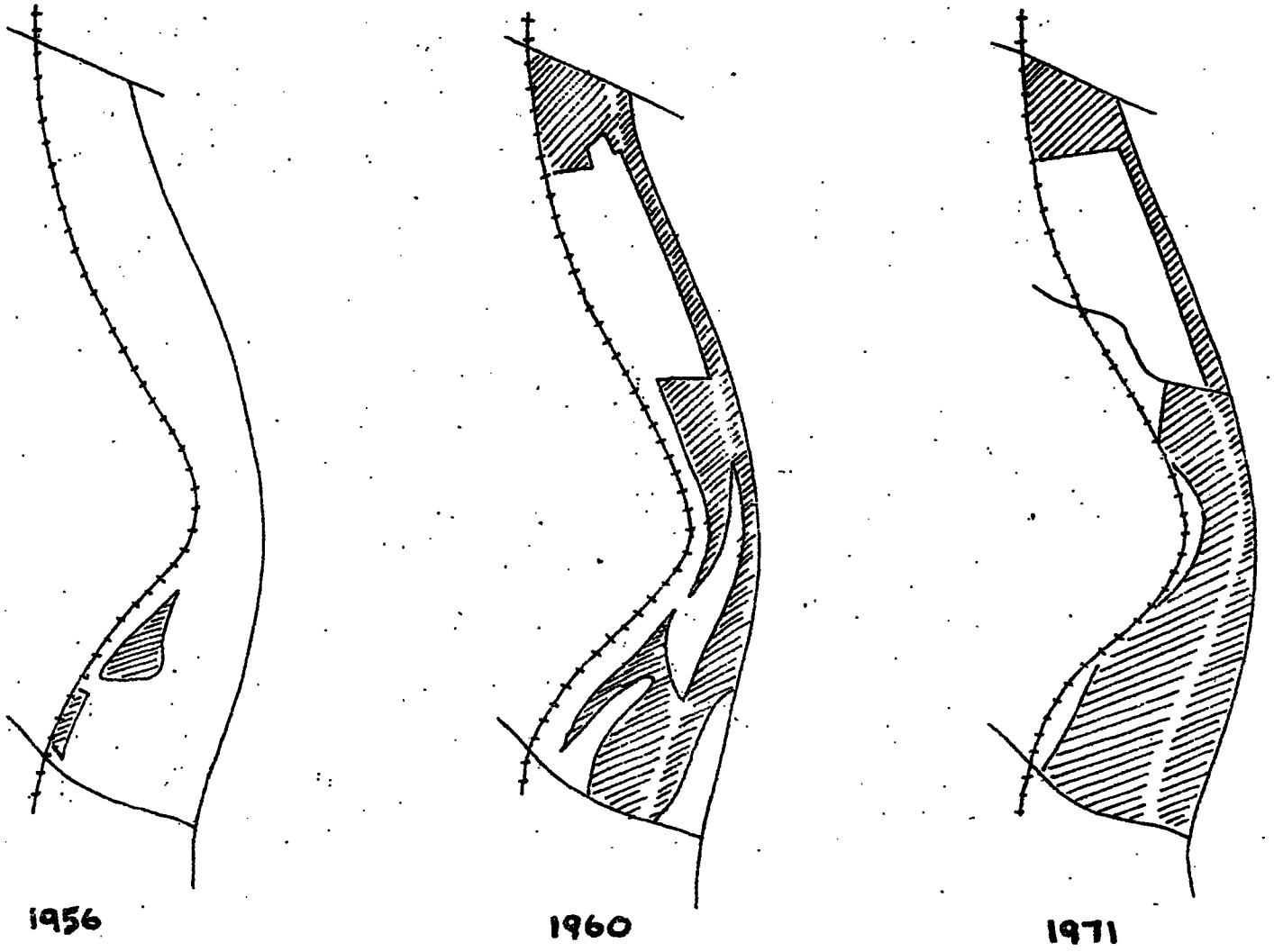
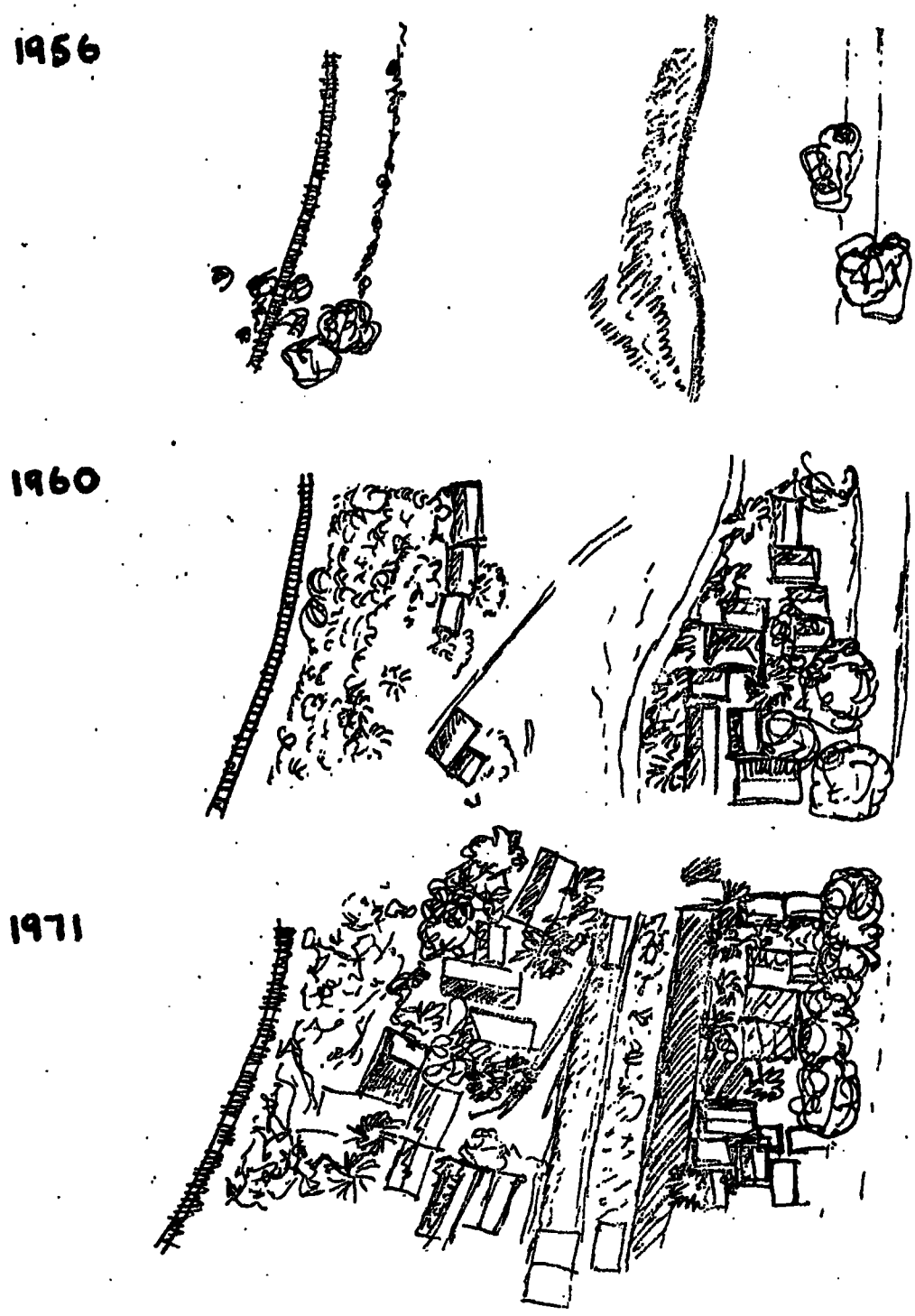


Figure 3

The nature of land use in 1956, 1960 and 1971.



SAMPLING METHOD

Based on 8000 ration books registered at the local co-operative store, there would be over 1000 families in the area. A study in depth clearly required the selection of a representative sample of the population. In common with the National Census and the Socio Economic Survey, it was decided to take the "household" as the basic survey unit but sampling of households proved more difficult than anticipated.

The Municipality had registered shanty houses and also made estimates of their numbers but many houses had lost their registration numbers and changes were constantly taking place. The possibility of an independent identification and recording of each house by the survey team was abandoned because of the size of the task and the suspicion, fear and even hostility that it might create, so undermining the reliability of the results. Great care was taken to maintain confidentiality and the independence of the University in undertaking this task.

The next attempt to provide a "sampling base" was with the aerial photographs. The 1971 photograph (and a less distinct 1972 photograph) were used as the basis of a "map" but when this was compared with the ground, it became clear that too many houses were hidden in the photograph and many more had been subsequently built or changed making it very difficult to locate the mapped houses on the ground. There were also frequent cases of two or more families under one roof which would have complicated the sampling process. This method of "sampling by roofs" was therefore also abandoned.

The method eventually adopted for sampling was based on two stages. First, five areas or "Blocks" were selected and second, households were picked at random from within each Block. In retrospect, the method seems simple and obvious but the use of existing registration numbers or aerial photographs would, if practicable, have been more regorous.

The reliability of this sampling method depended on the degree to which the Blocks could be expected to represent the whole Town. Five survey pairs were available for this work and so five Blocks were selected on the following criteria:

i) each Block to contain about 60 roofs as estimated from the Aerial Photograph;
ii) Blocks had to be defined by the railway, the canal, roads or other features that could be located on the ground;
iii) the combined Blocks had to contain roughly representative proportions of land near the road and away from it, near the canal and away from it and of low and high density housing.

These criteria could not be satisfied rigorously but the choice is believed to be "reasonably representative". The location of the 5 Blocks is shown in "Portrait", page 8.

This first stage in the sampling process was, in effect, a "quota sample". The second stage was a "random sample" based on information collected while "mapping" each Block as described in the next section.

MAPPING AND DRAWING

Shanty towns are described by terms such as "higgeldy-piggeldy", "chaotic" or "a maze" and few have been accurately mapped in order to study their character. This was the first major objective in this survey.

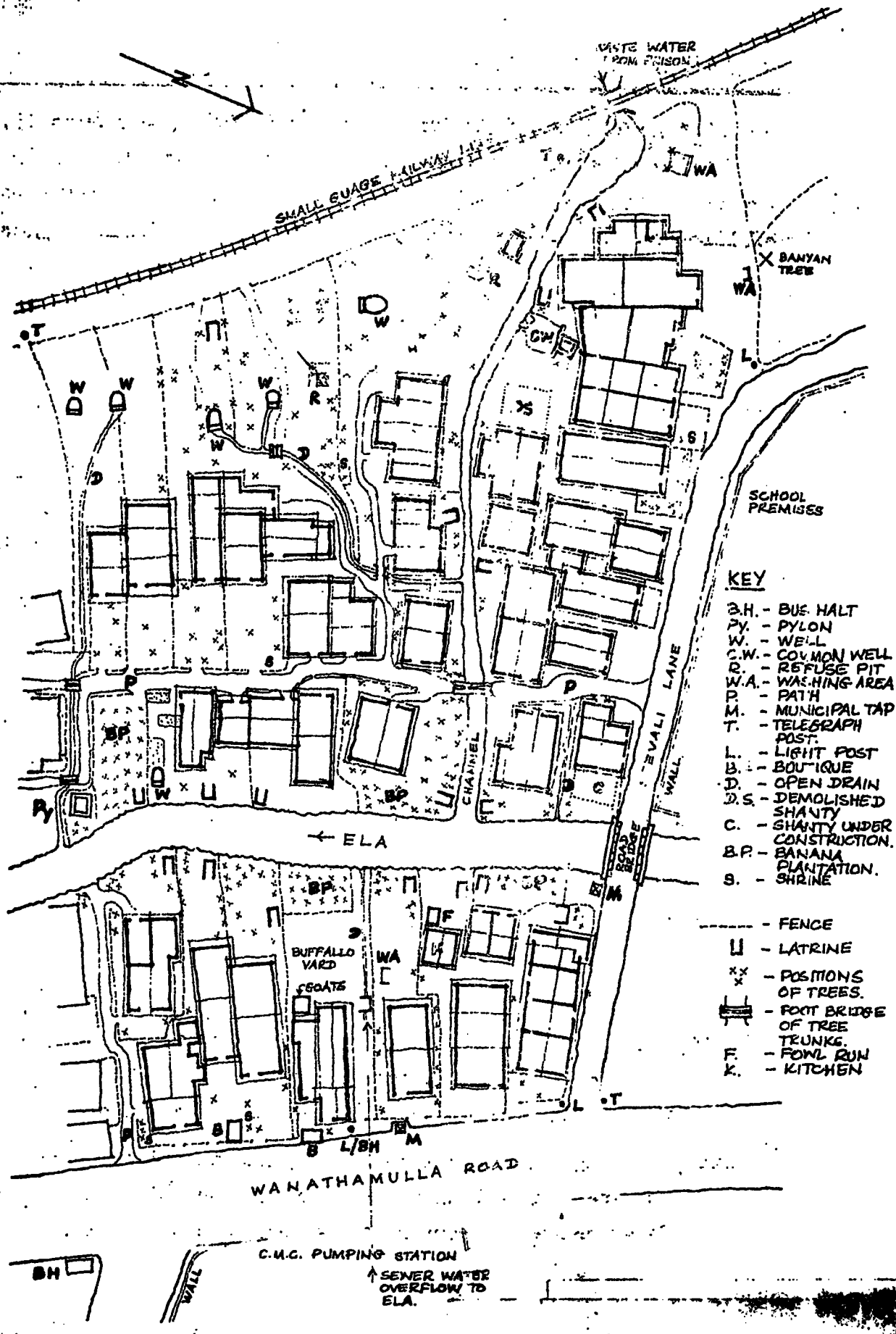
The "local assistants" from within the Shanty Town were appointed in order to help with the measuring, to act as body guards, to helps the survey staff to see the town "through local eyes" and to help explain the purpose of the work to many interested observers.

No maps of these houses existed. The Ordinance Survey Maps showed the area as "grassland" based on a survey during the 1940's. The Survey Department had just started mapping some shanty housing but the work was at preliminary draft stage in just one or two areas and proceeding slowly because of many higher priorities.

It is ironical that Wanathamulla Shanty Town is so close to Base-line Road. Traditional survey methods rely on a "baseline" and "triangulation" with poles and sighting levels but a glance at pages 9 to 13 of"Portrait" will show how complex such a task would be. One of the Block Plans is reproduced here in Figure 4.

A simplified method of surveying was devised ignoring level changes and measuring with a 10 metre string knotted at one metre intervals. The positions of features shown on the ordinance Survey Maps were noted and used as a series of "reference points A small group of houses at a time was sketched and their dimensions, together with direct and diagonal distances across open spaces, were measured to the nearest metre. The plan was then constructed on the drawing board as a series of rectangles and triangles which were built up into a network of zig-zag chain surveys linking up with the "reference points". This was an intricate and arduous task worked at a scale 2 or 5 times larger than the published plans and each plan took about 3 man-weeks for measurement, construction and presentation.

figure 4



PLAN OF BLOCK B

SCALE - 10 metres

ANALYSIS OF THE TOWN PLAN

The five Block Plans illustrated in "Portrait", pages 9 to 13, are worthy of careful study. They are not unique but they are probably the first of their kind in Sri Lanka and portray a way of life totally different to that catered for in "planned housing".

One of the five Block Plans is reproduced here in Figure 4. It shows not only the houses but also the use of open space and the positions of taps, latrines, drains, fences and other features. It is therefore possible to deduce the various house sizes, where land has been commandeered, how some people walk to taps, how close others live to drains and so on. The plan also shows a buffaloa yard, a fowl run, a boutique, banana plantations, a shanty under construction and a demolished shanty. The proportion of ground covered by houses is between 1/4 and 1/3.

It is evident from these plans that the inhabitants of Wanathamulla are not "equally poor". In Figure 4, there are tiny houses on Seevali Lane while just 20 metres away in the centre of the plan are large houses with their "own private" land.

These plans contrast with current "planned" or "mass" housing in the following ways:

i) there is a wide variety of house sizes and plan forms in contrast to mass housing which provides standardized sizes and plans;

ii) there is a variety of "other activities" within the housing area in contrast to mass housing where this is not possible, forbidden or discouraged;

iii) these houses are single storey and the plot ratio (proportion of built space to land occupied) is far too low by current urban economic standards.

ANALYSIS OF HOUSE DESIGN

On each of the five Block Plans, each of the sixty or fifty houses was numbered. Their numbers were put in a box and taken out at random. Plans and elevations were drawn of the first four and plans only of a further 8. This method provided a random sample of 60 plans and 20 elevations. Fewer elevations were needed because they were generally similar but more plans were needed because of their variety. A selection of these plans and elevations is shown in "Portrait", pages 14 to 33. It is impossible to express their variety in words or figures but a hint may be gained from the 16 plans drawn to the same scale in Figure 5. Each 'x' marks the position of a fire or cooking.

Because of the variety, no plan or elevation can be "typical" but Figure 6 shows one house which illustrates several common factors. It is reproduced here from page 17 of "Portrait" and the plan is the first in the second row in Figure 5. Like virtually all of the houses in Wanathamulla, its roof is of cadjan (woven coconut leaves) and walls of timber planks with a little remedial help from re-used non-traditional material, in this case plastic sheeting. The floor level is slightly raised above ground level to avoid flooding and keep the floor drier during rainy periods. The eaves are wide and low to throw heavy rain clear of the walls and so people entering will have to "duck" their heads. The interior is "busy" and "multi-purpose" with only one bed and little furniture except in the room on the right where visitors would be entertained. The frame is of timber posts and shelves can be fixed easily wherever needed. The shrine would normally be a picture of the Buddha with a light and perhaps fresh flowers. Smoke from the fire place would pass through the walls and roof.

Figure 5
Comparison of 16 Plans

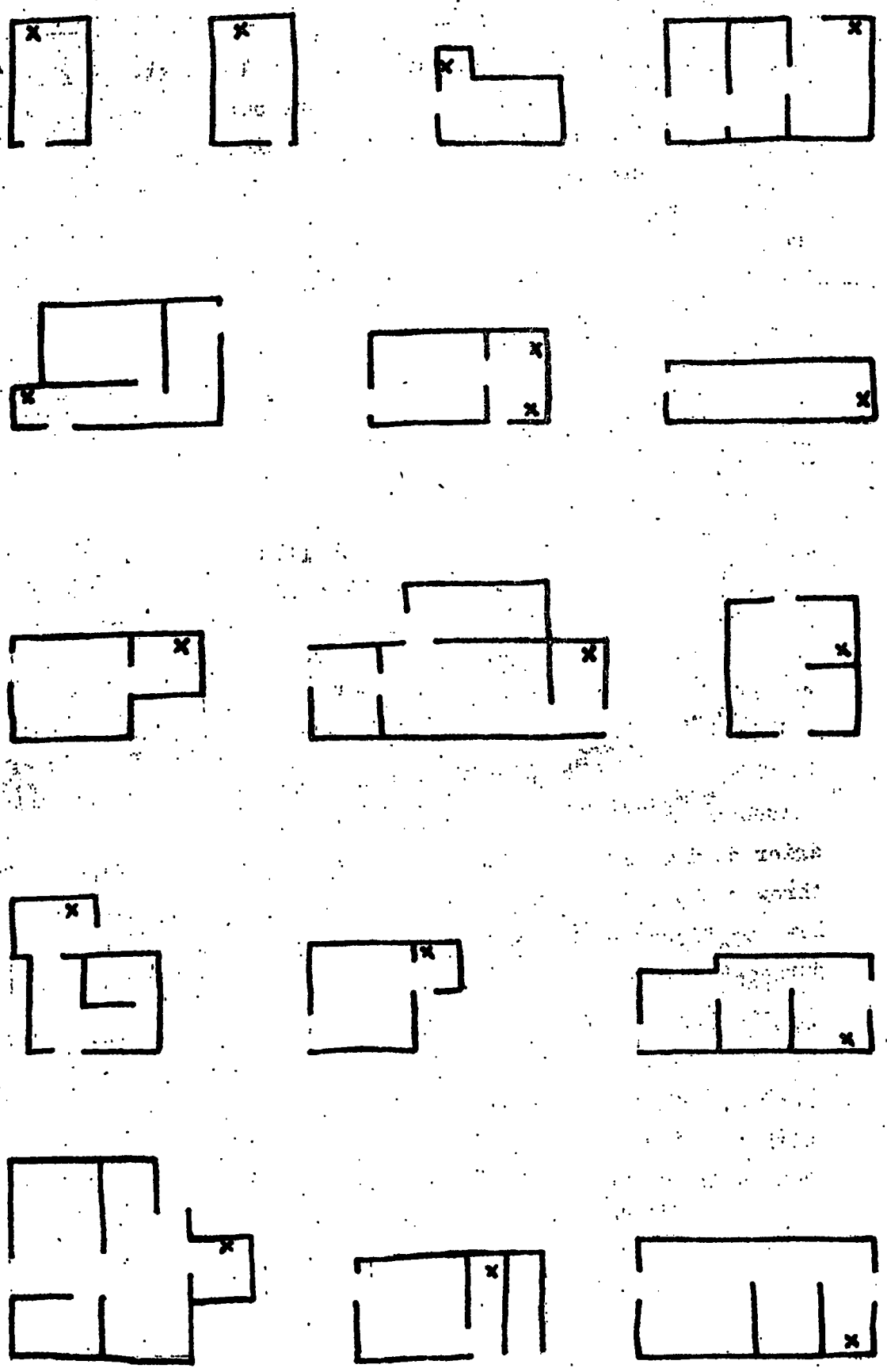
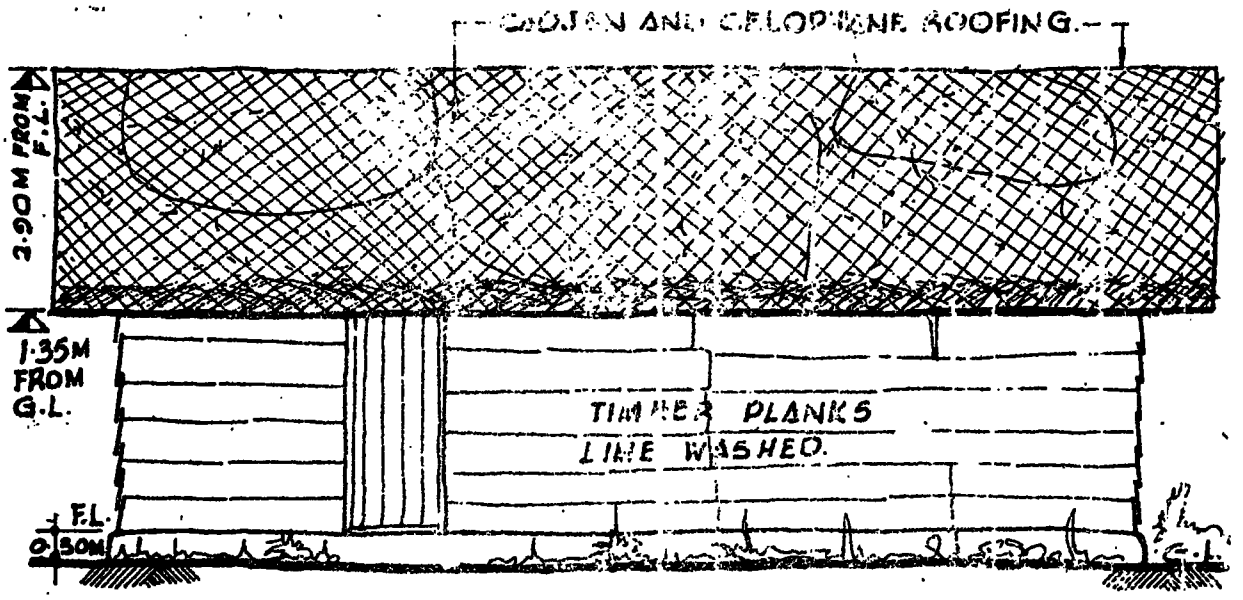
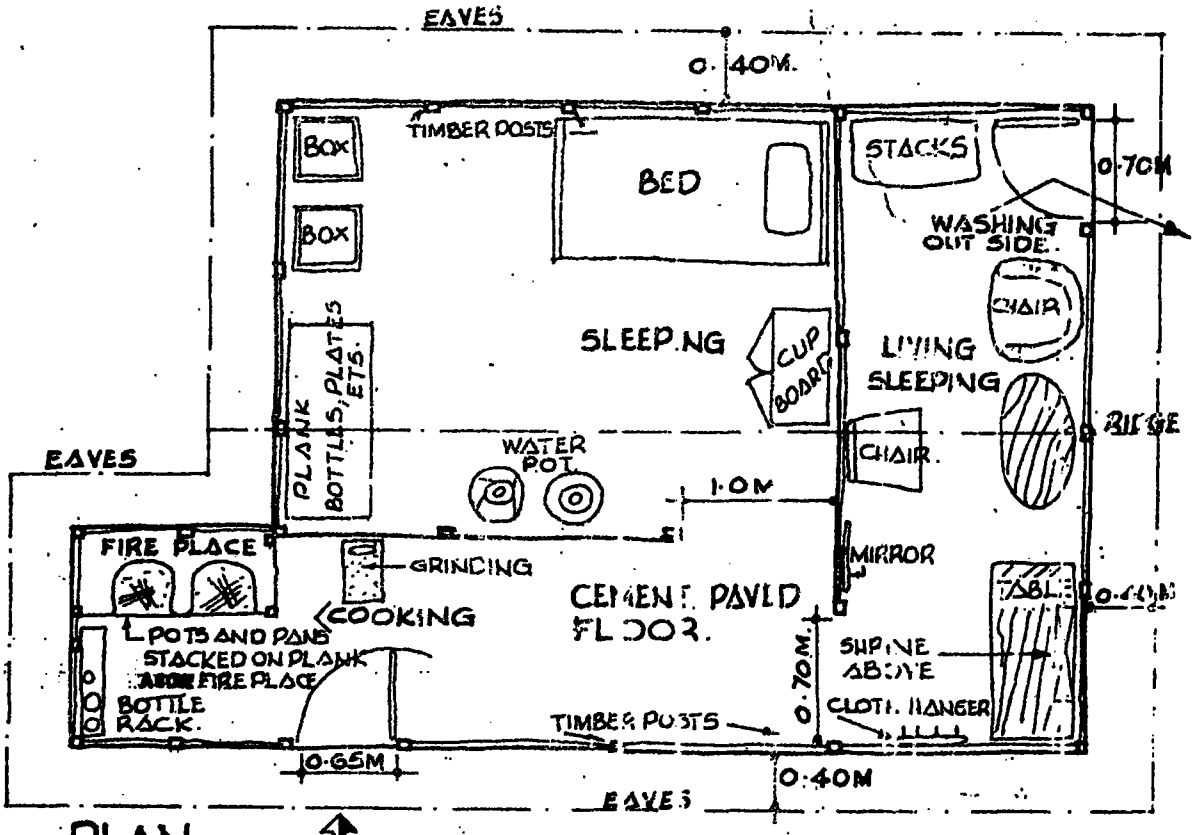


figure 6



FRONT ELEVATION.



PLAN.

PLAN & ELEVATION

SCALE - 1 metre

ANALYSIS OF PHYSICAL, SOCIAL AND ECONOMIC CONDITIONS

The final and major stage of the study of the shanty town was a questionnaire-interview completed for each of the 60 households whose house plans had been drawn. The replies therefore come from what is, as nearby as possible, a representative cross-section of the households. As a sample, it is only 60 of an estimated 1000 households and of limited statistical reliability and so the results are given with deliberate approximation.

The full questionnaire is set out in the Appendix and includes the instructions to the survey workers, of particular importance is paragraph 1.3 which asks the interviewer to collect most of the information by discussion rather than by direct questioning. The questions were as specific and factual as possible, most had been tested during the initial investigations or in subsequent trial surveys and some of the questions had arisen from discussion with the shanty dwellers. The first part of the questionnaire dealt with the house and its services and the remainder with the household.

The replies were coded after the survey and then punched directly from the forms on to computer cards. Three computer programmes were written to aid in the analysis of the data. The first programme detected impossible and unlikely replies which were then individually checked and corrected if necessary. The second programme analysed the replies into tables showing how many households had given each reply and also comparing any set of replies with any other. The third programme used the data to calculate more information and cross-check replies. The programmes were written in a simple form of Fortran and run on the IBM 1130 Computer at Katubedda Campus. Input was on standard cards through an IBM 1442 card Reader and output on paper from an IBM 1132 Printer.

The sub-headings that follow correspond with those in the questionnaire reproduced in the Appendix. Each sub-section summarizes the most important results.

THE HOUSE

Many households live in sub-divided houses. Figure 7 shows about half the households in a house of their own under a single roof, one third sharing a house and roof with one other household and one sixth sharing with two or three other households.

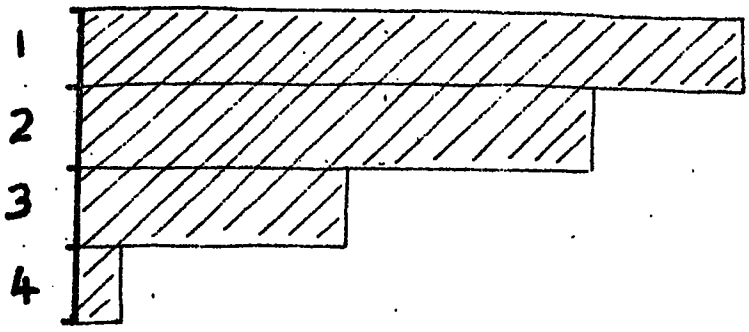
The distribution of house sizes is shown in Figure 8. The most common size is 15 to 20 square metres (150 to 200 square feet - note that all conversions are approximate). A half of the houses are between 10 and 20 square metres (100 and 200 square feet) and a quarter between 20 and 30 square metres (200 and 300 square feet). The current maximum of 2000 square feet (200 square metres) would therefore accommodate about 10 shanty families.

Nearly a half of the houses had only one "living" room, 40% had two and just a few had three or four (spaces used only for cooking, storage etc. were not counted as living rooms but spaces used for sitting, sleeping etc. as well as for cooking were counted as living rooms).

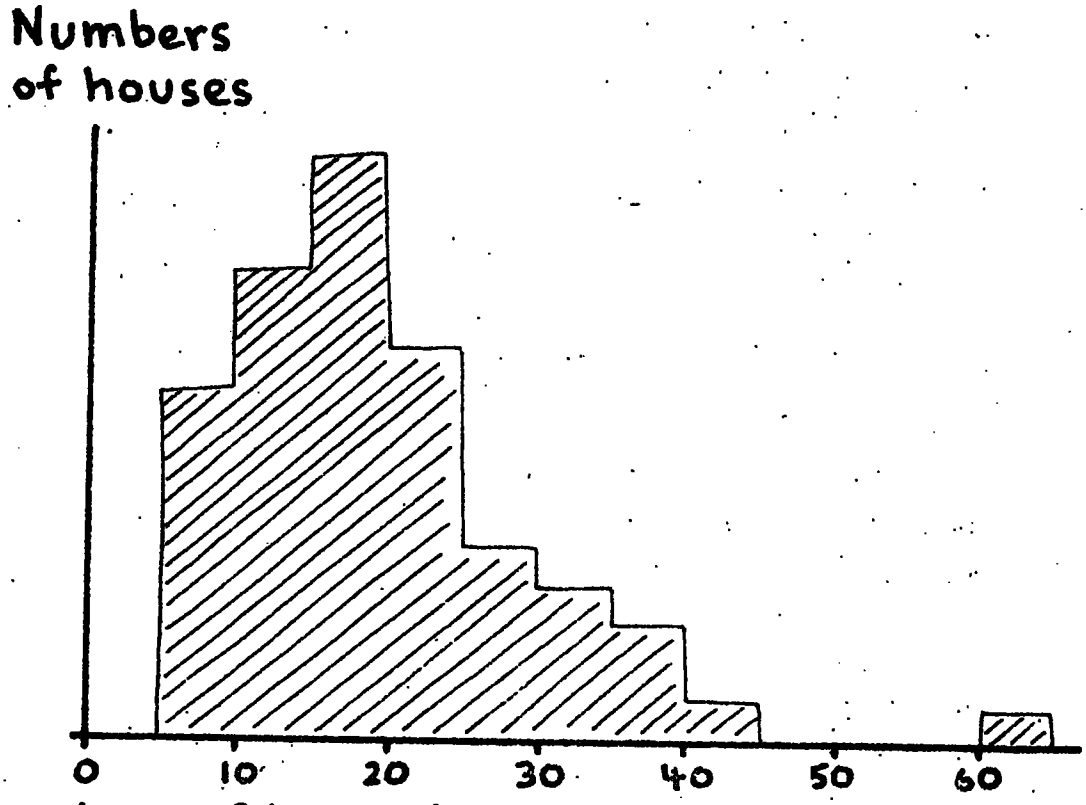
Two thirds of the houses were roofed in cadjan and one third in corrugated metal sheets. Other surveys have shown that the roof has to be replaced every second year and repaired in between and is the most expensive item in housing. In this case, one third claimed that their roof was weather proof, rather more that it leaked a little and a quarter that the leaks meant that the sleeping area was restricted. Figure 9 shows these replies proportionately.

Virtually all the houses in this particular Shanty Town had walls of timber planks and these were in fair or good condition. Half the floors were of cement and half were of mud or dung.

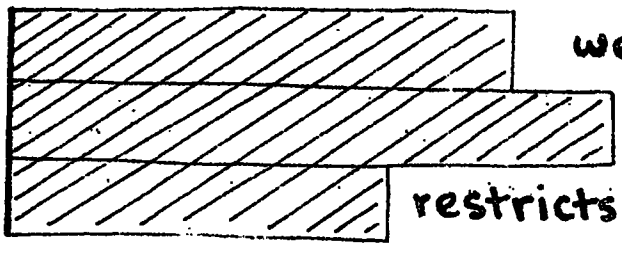
Figures 7 , 8 and 9.



Proportions of 1, 2, 3 and 4 households under same roof.



The Distribution of house sizes.



Roof Condition

SERVICES

Two thirds of the houses had a cooking area within the house and one third cooked in an attached space, usually a "lean to" Everybody cooked on a wood fire and fetched water from street taps. Three quarters used a bottle-lamp for light after dark (a wick dipped into oil in an upright bottle which, without care, is a serious fire hazard).

The nearest public toilet was more than ten minutes' walk away for half the people and so they, and most other people, used canal latrines shared among one or more families. Two thirds washed at a well and one third used a public bath.

COMING TO THE SHANTY TOWN

In Figure 10, the two upper maps show the birth place of each household head within Colombo City (on the left) or elsewhere (on the right). The dots indicate the postal area in Colombo on the District in the Island but not the exact locations of birthplaces. In the Colombo map, Baseline Road and Horton Place are shown for easier reference and the rectangle marks the Shanty Town. The two lower maps show where the heads of households lived immediately before moving into this Shanty Town.

The upper diagrams show that two thirds of the household heads were born outside the City, mostly in the Colombo, Galle and Matara District (those shown in the Colombo District in the top right maps were born within the District but beyond the City limits). Those from within the City were all born in the Northern part.

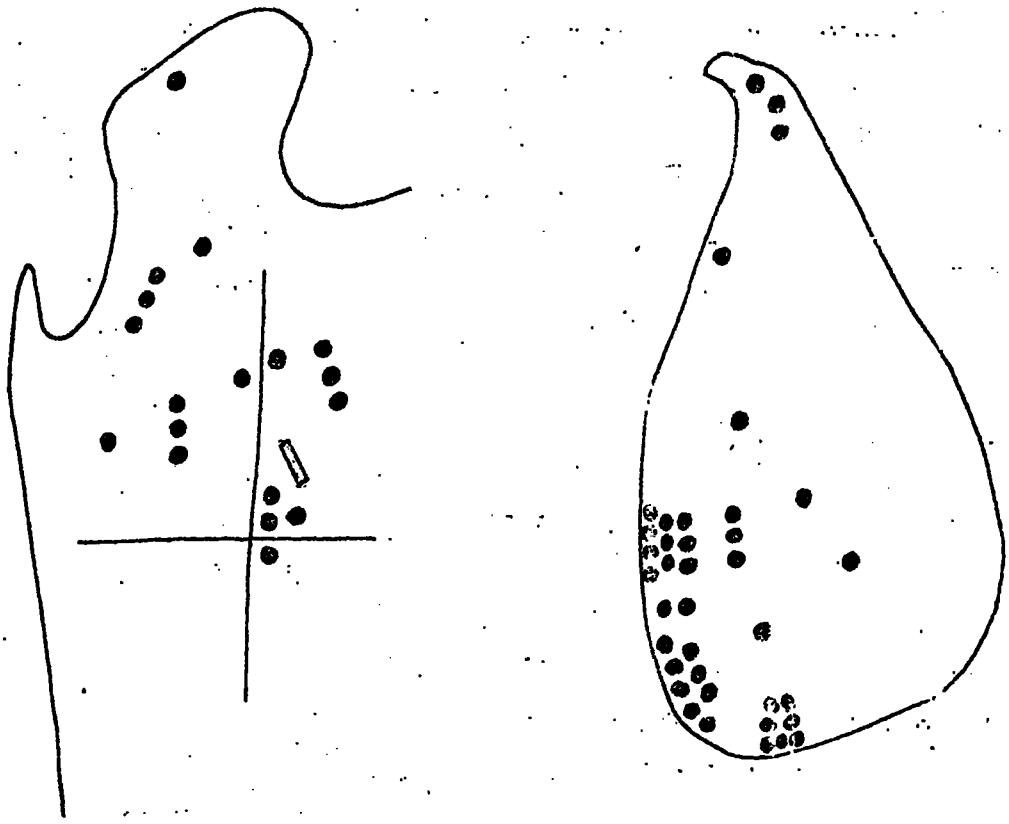
In the lower diagrams, the dots are a little more concentrated around Colombo and around the Shanty Town than in the corresponding diagrams above. This indicated that a slight drift towards the City and towards this particular location took place before the actual moves into the Shanty Town.

These diagrams show that a shanty town is part of "the process of urbanization", of people moving from rural areas towards large towns. The reasons for the move to the Shanty Town were varied and six or more of the sixty gave each of the following reasons: parents came, wife/husband was here, friends/relations were here, seeking employment, small rent. A better education for children and the nearby hospital facilities were mentioned as advantages but not as primary reasons.

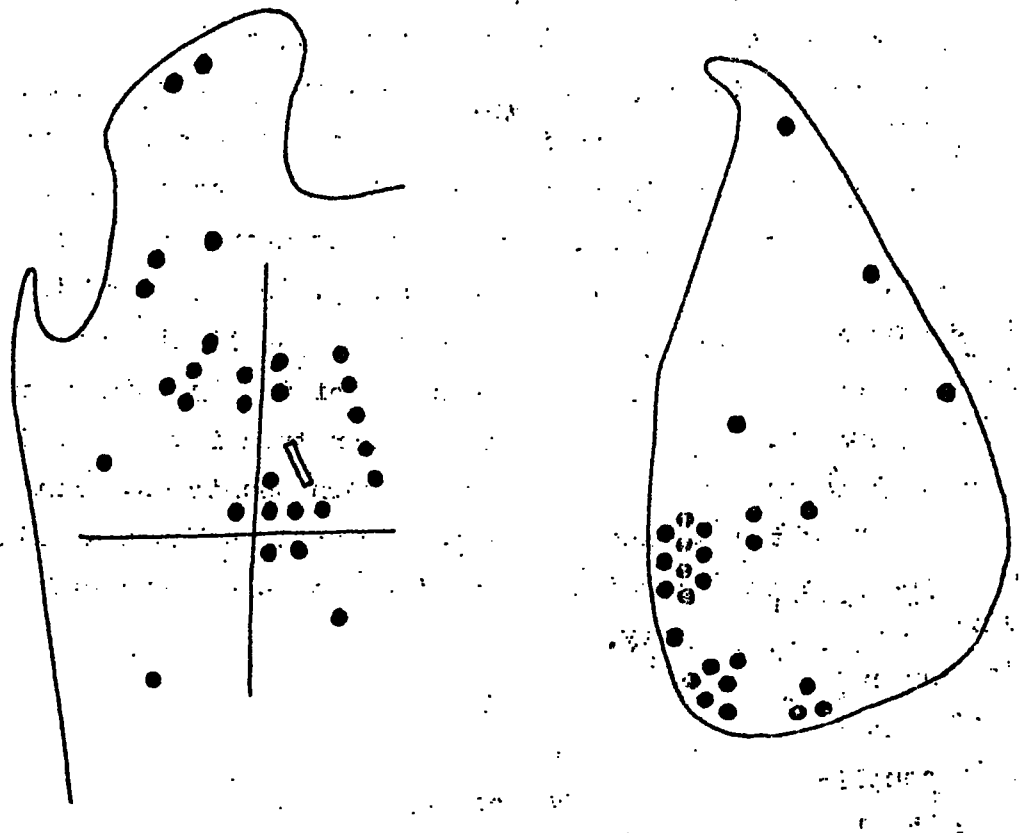
Half the households built their own house, a quarter bought it, about 15% rent it and about 10% were given it.

Figure 10

Birthplace



Previous home



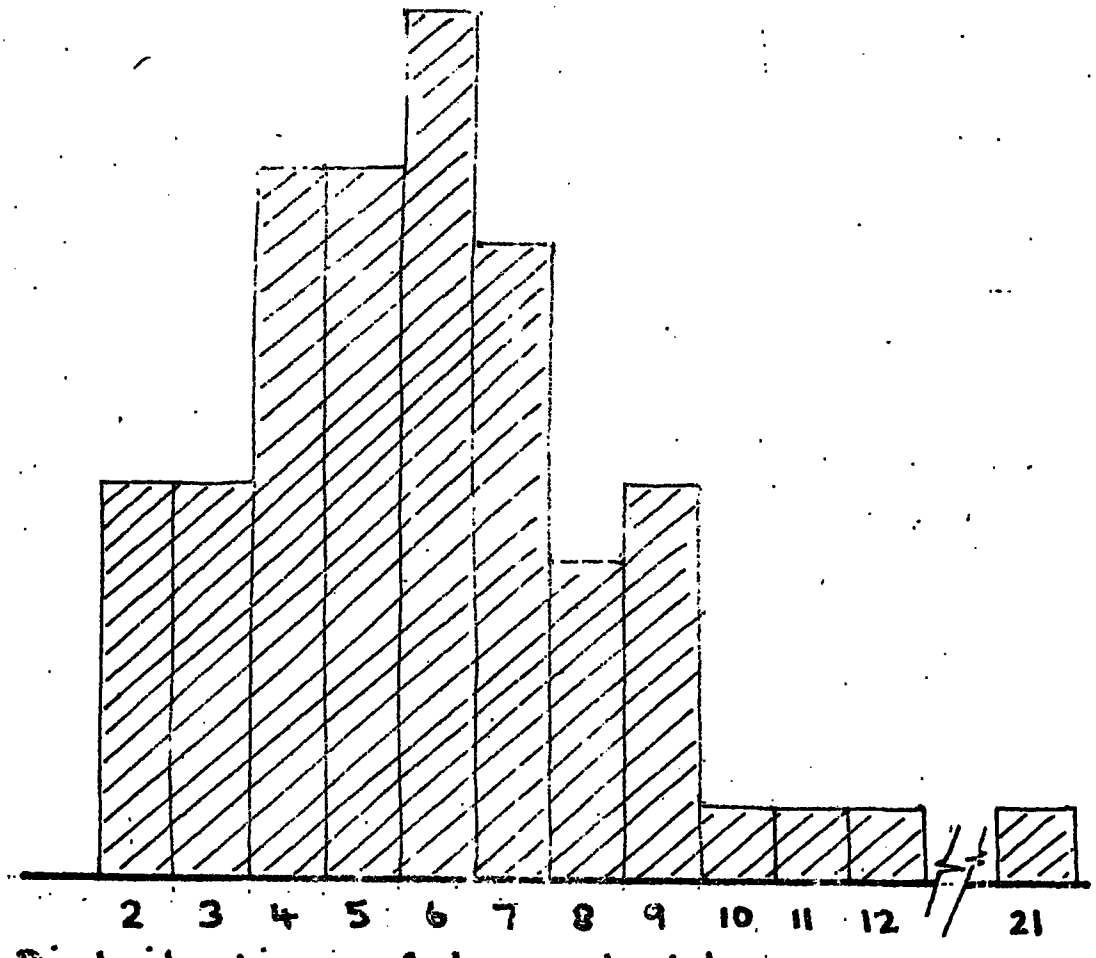
HOUSEHOLD STRUCTURE

One in three of the households were without a father or without a mother. One in six families had one or two grand parents living with them. One in ten families shared their house with a second family but friends, relatives or lodgers were rarely staying. It is likely that the traditional large "extended family" is rare here firstly because the space is so limited and secondly because building another shanty house is relatively easy.

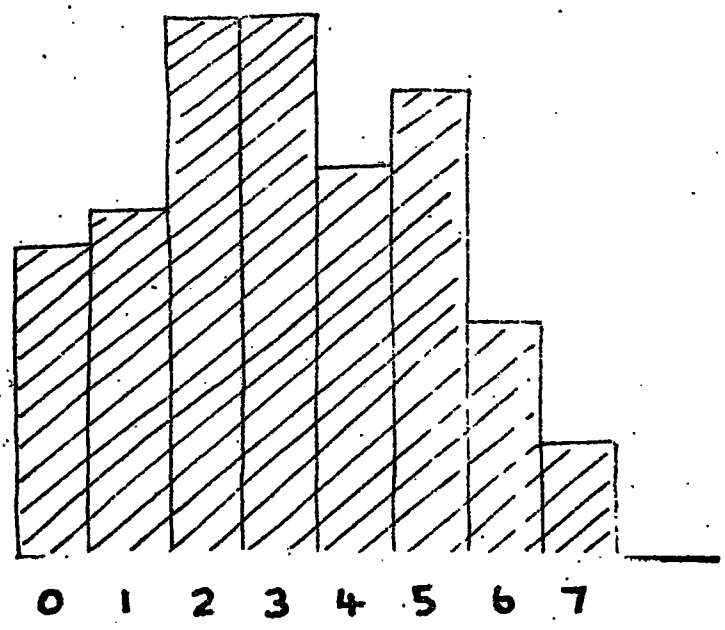
The household sizes are shown in Figure 11. The average size was 6 people but households of 4 to 7 were common. One house hold in six had only 2 or 3 people and one in six had 9 or more. Figure 12 shows the number of children per family and once again, the variation is wide. Two to five children were common, one household in five had one child or none and one in ten had 6 or 7 children.

The age distribution of a community gives vital clues about its future growth. It is shown in Figure 13 in the form of a "half pyramid". Where males are shown on one side and females on the other, the diagram is called an "age pyramid". The four small diagrams show four types of age pyramid. If the population is expanding rapidly as in most developing countries the base of the pyramid is wide and the sides concave. If the birth rate is steady (i.e. parents having about the same number of children as their parents before), the sides of the pyramid will be straight as in the second small diagram. If parents have fewer children, the sides of the pyramid near the base will first become vertical and then turn inwards as is now beginning to happen in one or two Western Countries. But the application of this theoretical measurement to Wanathamulla Shanty Town is complicated by question of cause and effect and of data reliability.

Figures 11 and 12



Distribution of household size



Distribution of children per household

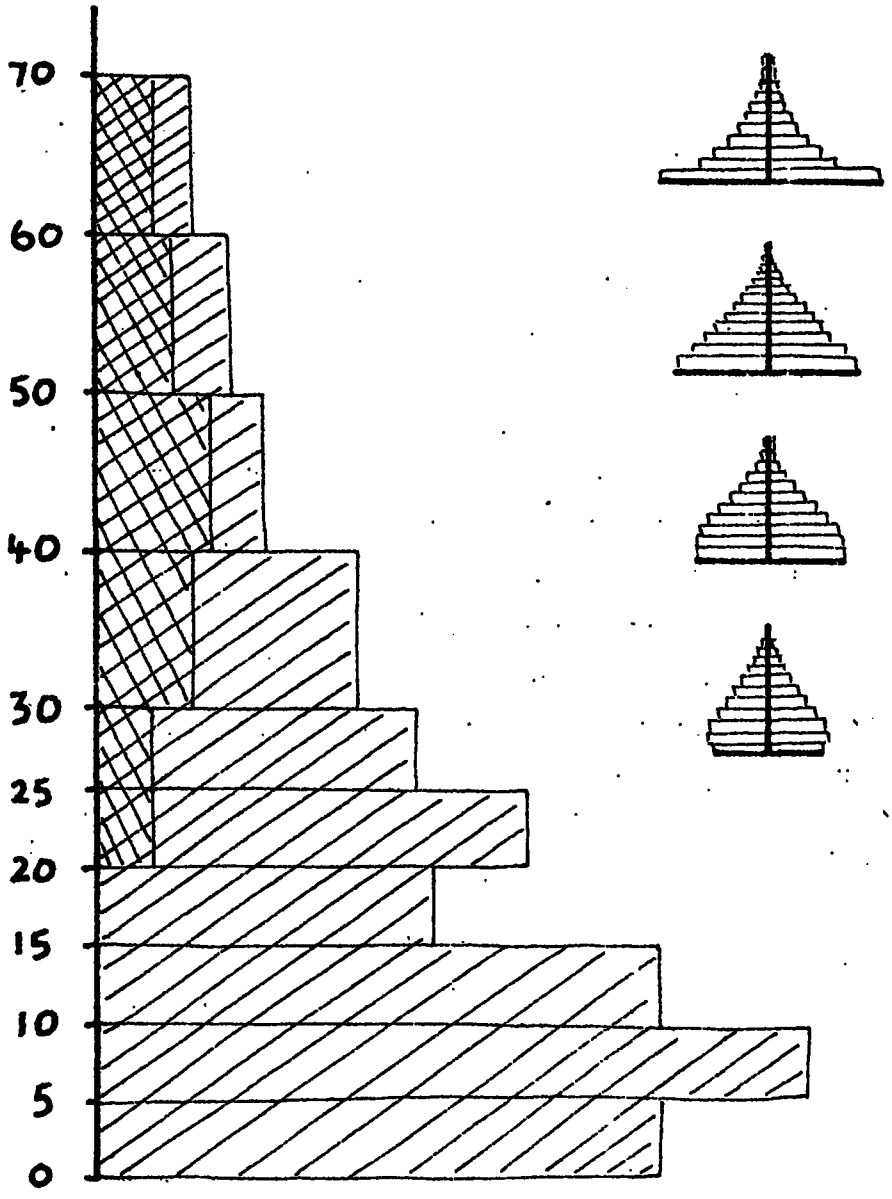
The relative lengths of the horizontal bands in Figure 13 show the relative porportions of the population in the different age groups almost 45% of the population was under 15, 40% was between 15 and 39 and 15% was 40 and over. This shows, therefore, a predominantly young community but it does not necessarily show that the people in this Shanty Town have a lot of children; it may be an indication that people with many young children have to make their home in the Shanty Town. This "age pyramid" should be compared with others for the country as a whole and for Urban areas.

There are two irregularities in the pyramid in the 0-4 and 15.19 age groups which may be important. The apparent reduction in the birth rate indicated by the smaller number of children in the 0.4 age group suggests that the fourth stage of the four small diagrams has been reached but this is almost certainly not the case. This same "quirk of statistics" appears in the first table of the National Census and in the Census data of many other Countries and is found to be incorrect when the next census is taken. The Department of Census and Statistics suggested (in discussion) that this may be accounted for by assuming than the "sleeping baby" is forgotten in the cences declaration. There could be confusion over a "nought-year-old child" but no entirely satisfactory explanation has been given. It follows that there can be no reliable early indication as to whether or not the birth rate is changing. Since this is probably second only in importance to Gross National Product in National Statistics and certainly in estimating housing demand, a more reliable method of measurement should surely be sought. The second irregularity in the pyramid in Figure 13 may be due to older teenagers leaving the Shanty Town or to an under declaration because they are rarely at home.

The square-shaded part of the pyramid in Figure 13 shows the a age distribution of the household heads. Most were in their 30's and 40's but quite a few were in their 20's, 50's and 60's; once again no average/typical age but a wide variation.

Figure 13

Age distribution



all inhabitants

heads of households

Just one pattern was clear. Over 80% of the inhabitants were Sinhalese and two thirds worshipped at a Buddhist Temple indicating a pedominantly Sinhalese Buddhist Community. However, other racial groups and those of other Faiths were also living in the Town.

ACTIVITIES

The general picture is of household members spending an hour or so a day chatting, rarely "visiting" other shanties in the formal sense, rarely going to the Pettah Markets, going to the cinema once a month, visiting other parts of Colombo once a week and going to other parts of the Island once in two years. The questions or "activities" were difficult to answer and the coding of the answers "hid" some of the information, particularly on shopping habits. The picture of shopping gained from discussion (not from questiionnaire replies) was of visits to the nearby markets in Dematagoda or Borella up to three times a week and the rest of the goods required being bought from boutiques and hawkers within the Shanty Town.

HEALTH AND EDUCATION

Nearly two thirds of the households used the Government Dispensary at least once a month and a quarter visited the Ayurvedic Dispensary and a similar number the Children's Hospital during a month. About one household in ten went to the General Hospital for attention or to visit patients and a similar number used other medical facilities. Two thirds of the households were of the opinion that most parents were planning their families indicating a wide acceptance of family planning.

The first investigation and Pilot Surveys showed that the study of education levels and oppertunities was a specialist task. The general picture is of children leaving school between 10 and 13 because they must help by earning, find the subjects taught irrelevant or the standards expected beyond them or because of the cost of books, clothes, shoes and so on. Educational opportunity is the subject of studies at the Centre for Demographic studies in Colombo.

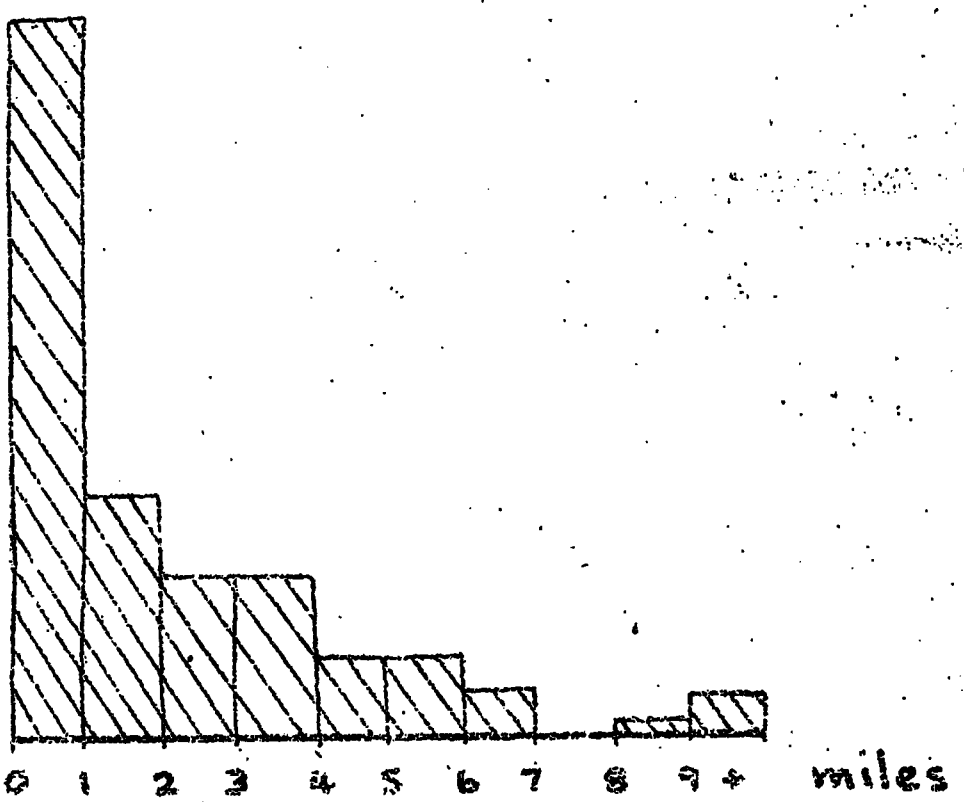
EMPLOYMENT

The next section on the questionnaire was concerned with spending but this will be discussed together with Income after these comments on Employment.

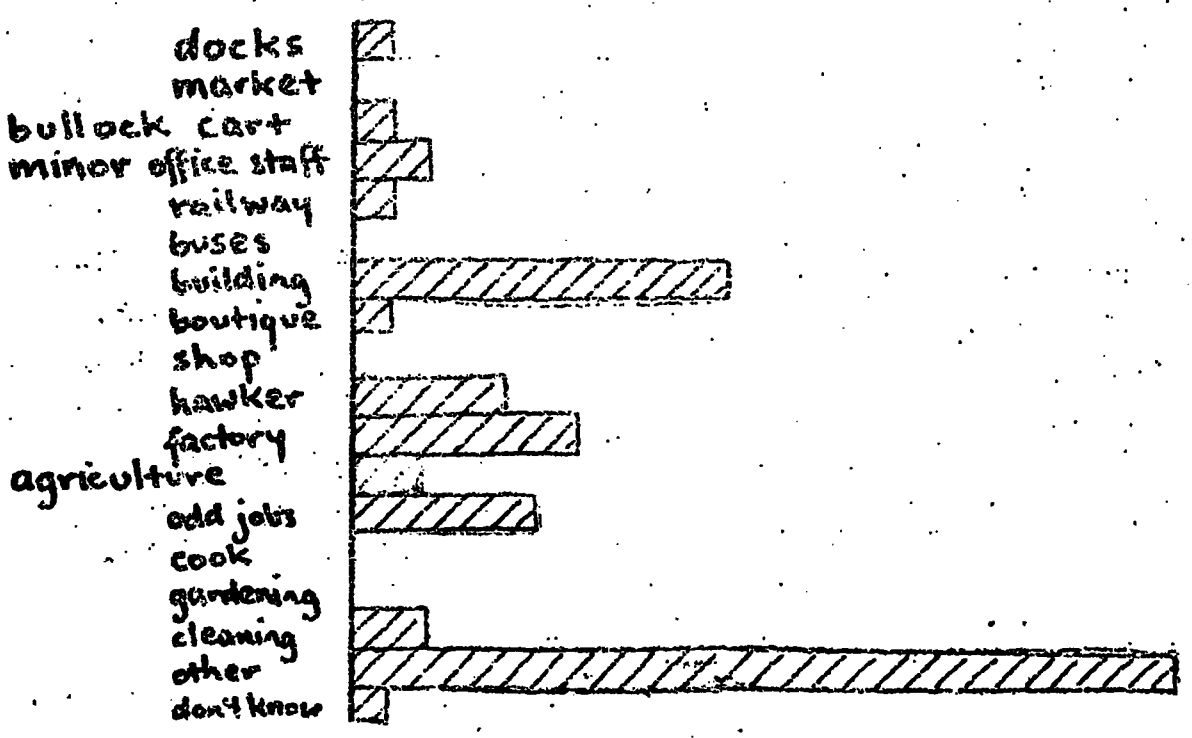
Employment was surprisingly "localized" for a shanty town three miles from the major employers. Figure 14 shows that almost 50% travelled less than 1 mile (even if this included 25% who were unemployed as suggested below, it still indicates that one in every three employed travelled under 1 mile) and only one in six went further than 4 miles. The main difficulty of re-locating a shanty town outside a city is the expense of travelling to work and even the shortest ride, though cheap, would take a significant part of the day's earnings.

There was no major employer in this vicinity and Figure 15 shows a great variety of employment. The questionnaire listed 16 types of work and it is remarkable that 40% do jobs not listed. Classification by "nature of employment" showed 30% with permanent jobs, 20% self-employed and 25% with casual or temporary jobs suggesting that the other 25% were unemployed. If so, these might be included under those travelling less than 1 mile to work in Figure 14 and doing "other" employment in Figure 15. One person in five was employed in building and about one in ten in each of hawking, factory work and odd jobs. About one household in six had a second employed person and half of these also had a third, mainly doing odd jobs or running a boutique.

Figures 14 and 15



Distance travelled to work



Types of employment

COMPARING INCOME AND EXPENDITURE

Now incomes and expenditures are the most important features of shanty town life and special efforts were made to obtain accurate information and to check its reliability.

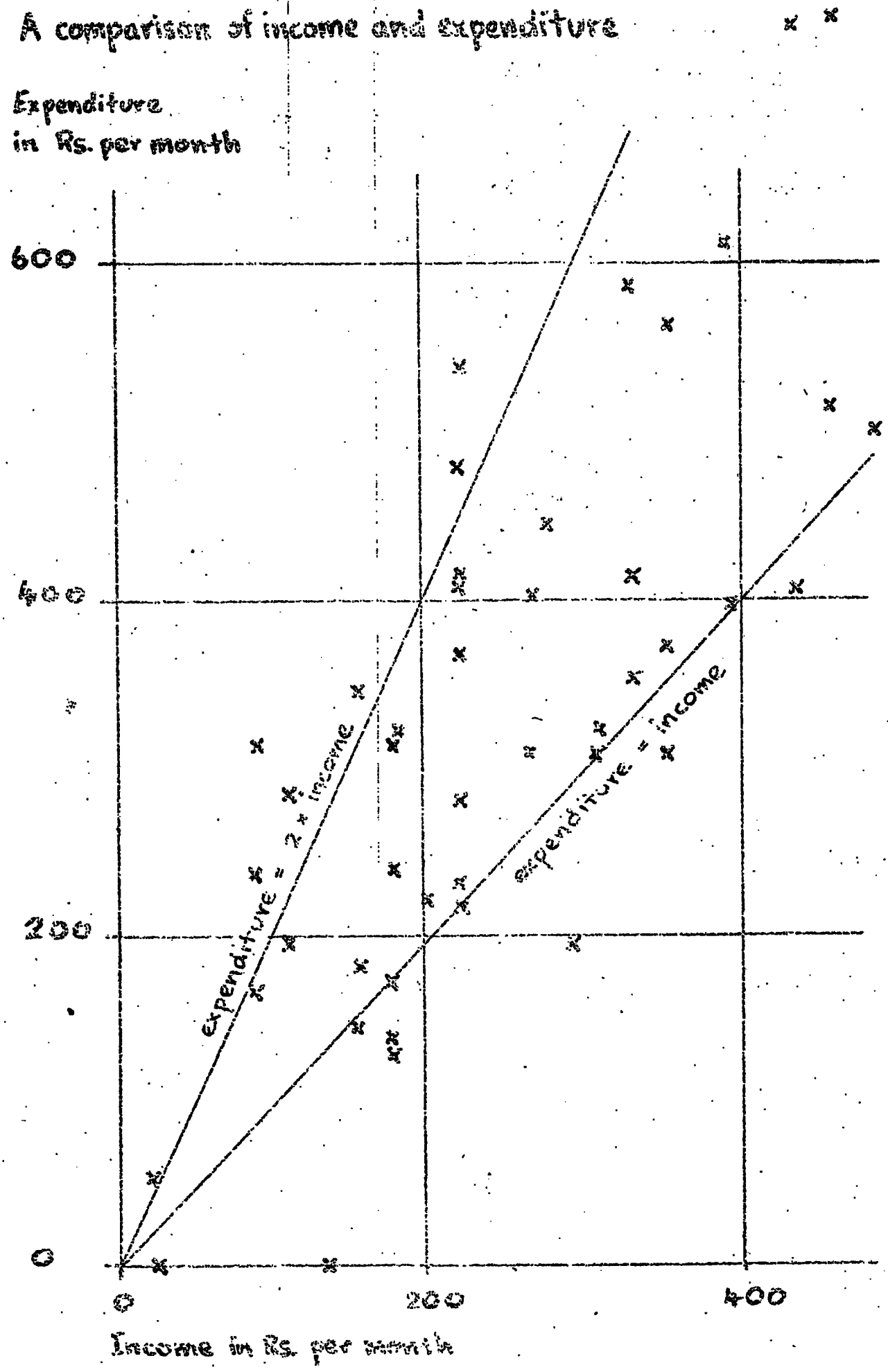
Answers to questions on income and expenditure are notoriously unreliable. The Socio Economic Survey of Sri Lanka included a detailed and thorough investigation of income and expenditure but the results showed people throughout the Island spending an average of 1½ times the amount they received. Savings and loans were included and so, taken overall, the income and expenditure figures should have been equal. The significant difference is usually attributed to "hidden undeclared income" and sometimes to people understating income to avoid higher taxes, rates, rents or other charges. It could be because low incomes and high expenditures are more memorable than the reverse. Whatever the reason, this survey attempted to establish a pattern using the computer facilities available.

Questions on income and expenditure were asked on weekly, monthly or annual time scales as appropriate (food weekly, re-roofing annual etc.) and, after multiplication by 52 or 12, total annual income and expenditure for each household, were compared. The results, converted back to a monthly time scale, are shown in Figure 16. Each cross on the graph corresponds to one household and indicates its stated income on the horizontal axis and its stated expenditure on the vertical axis. Eight crosses scattered at various points beyond the graph are not shown and the two crosses on the lower axis are based on incomplete information. The remaining points are scattered widely confirming the relative unreliability of the information. About one household in six quoted an expenditure below their income (crosses below the lower diagonal) and one in six quoted an expenditure more than twice their income (crosses above the upper diagonal) with an average, as in the Socio-Economic Survey, of expenditure about 1½ times income.

Without accurate accounting, it is not surprising that the income and expenditure figures disagree but the size and variation of the discrepency and the exaggeration it represents cannot be ignored. Since these are the most quantitative parts of the survey, they are the most easily checked but they may indicate the relative unreliability of other such survey data or at least, indicate how cautiously results should be interpretted. That is why most of the results quoted here are kept in general terms and quantitative details are not given precisely. There is no clear evidence to indicate whether expenditure has been exaggerated or income under-stated; this question may be resolved with the development and implementation of input/output accounting. In the figures quoted below, income has been raised by 1/5 from 100 to 120% and expenditure reduced by 1/5 from 150 to 120%.

Figure 16

A comparison of income and expenditure



SPENDING

About four out of five household spent under Rs.80/- per week on food(note that all spending figures quoted are 1/5 below those stated in the Survey replies). One household in three spent over Rs.8/- per week on travel and one in three were repaying over Rs.16/- per month on loans.Virtually nobody in the Survey claimed to lend or save money suggesting that the money lenders were outside the shanty town. Perhaps this situation is not very different from borrowing from banks or building societies. Only one household in three would normally pay more than Rs.8/- per month on clothes but several in the survey had paid out more in the previous month for a festival. One household in four had "other expenses" averaging Rs.40/- during the previous month.

On house repairs, one household in four spent between Rs.80/- and Rs.160/- on re-roofing during the previous year but only one in ten spent as much as this on other repairs. On house improvements, only one household in four had spent more than Rs.80/- since in. The building fabric is therefore relatively static and re-roofing was the only major expense.

INCOME

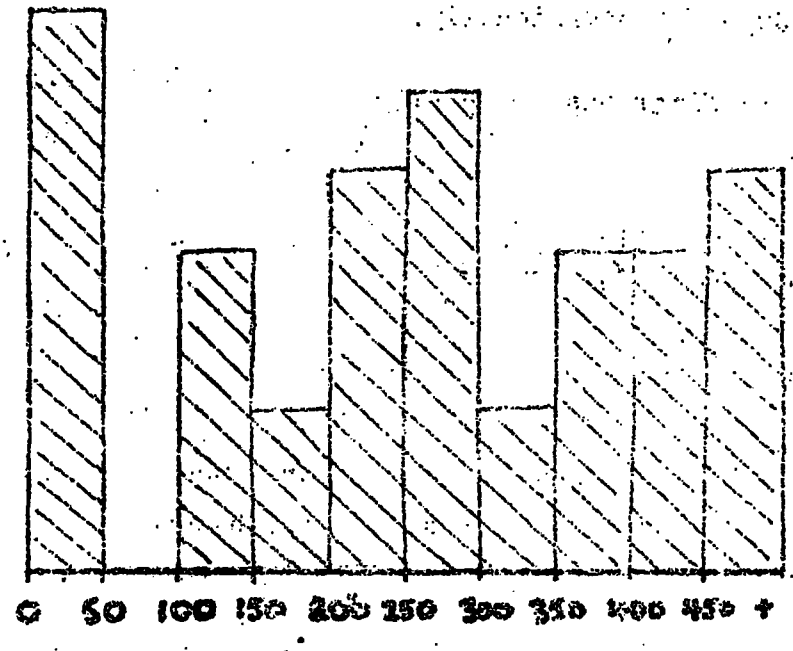
Questions about income were left until almost last by when, it was hoped, people would have understood the purpose of the survey and would answer correctly. Even so, the income distribution shown in Figure 17 shows a large number of households in the Rs.0-50/- category of whom most, if not all, are the "no replies" or "don't knows". Conclusions are therefore based on the 80% who did reply and the incomes shown are 1/5 above those stated.

The picture of incomes shown in Figure 17 is of a surprisingly wide variation from Rs.100 to over Rs.450 per month. These figures include the earnings of second and third income earners in the household; one household in six received around Rs.150/- per month in this way. "Hidden incomes" from growing your own food and so on were not included as they are probably small in urban areas but they should be included in any more detailed economic survey. The savings due to subsidized rice and other rationed foods were also excluded.

The wide distribution confirms the deduction from the Town Plans that the inhabitants of this Shanty Town are far from "equally poor". The frequently quoted income distribution from the Socio-Economic Survey is of 40% of households earning under Rs.200/- per month and 20% earning over Rs.400/-. If these figures were raised to Rs.250/- and Rs.500/- as in this survey, then the Socio-Economic Survey income distribution of 1970 is very similar to the Wanathamulla shanty town income distribution of 1976 except that few shanty town households earn over Rs.500/- per month. The shanty town dwellers are therefore poorer than the National average by at least an amount equal to the rise in the cost of living between 1970 and 1976. They probably earn between 50 and 70% of those in the rest of the Island.

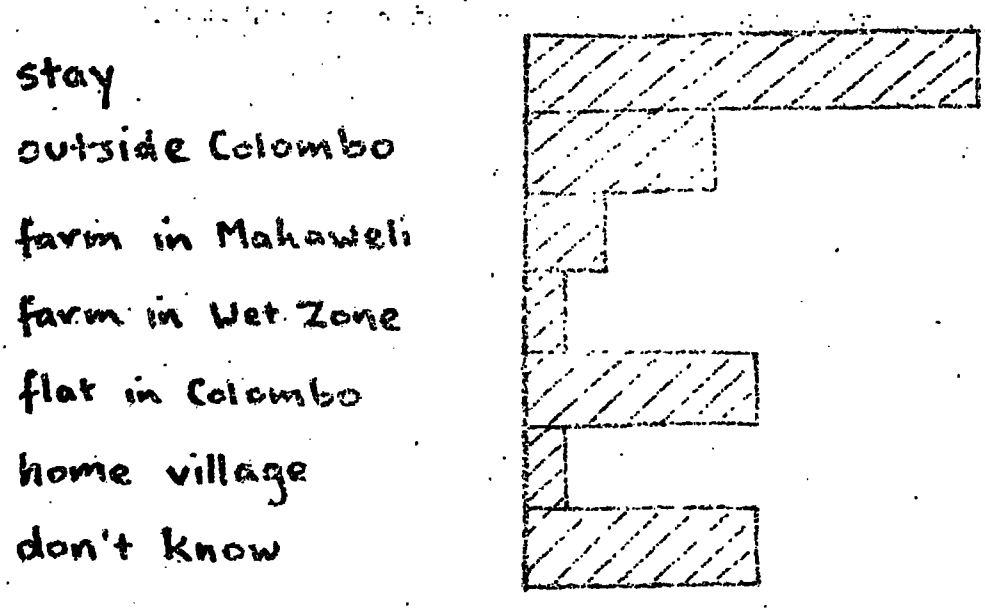
To put the earnings in perspective, a household of six earning Rs.250-300 per month must manage on Rs1/50 per person per day (9p. in Sterling in 1976). This must cover everything except the subsidized part of rationed goods and, because this is the average, half the households were managing on less. It is this statistic which emphasizes how negligible is the money that can be devoted to "non-essentials" such as better housing.

Figures 17 and 18



Income in Rs. per month

Would prefer to:



Where people would prefer to live.

MISCELLANEOUS

Most people never left their house unattended but one household in six did so daily and a few occasionally.

In one house in six, the floor was frequently too wet to sleep on properly.

Nine household articles were listed (see Appendix, paragraph 11.3) and half the households owned 1,2 or 3 of these and a third owned more.

Of the four tasks, carpentry, masonry, electric wiring and plumbing, 20% of the houholds had carried out two of these four and a further 15% one of them indicating a fair presence of basic skills which, for families better off, has been the backbone of the moderately successful aided self-help housing programme.

Occupants were asked where they would like to live if given a choice and their replies are analysed in Figure 18. One third would like to stay where they are, perhaps motivated by security but one household in six would like a multi-storey flat in Colombo and a similar number would like a larger plot 15 miles from Colombo. The three oral choices offered were not very popular suggesting a preference for and perhaps a heavy dependence upon the city, its services and its employment opportunities.

CONCLUSIONS

This Report has been deliberately "cold and analytical" and has not attempted to communicate either the struggles for existence or the vibrant activity of the shanty town. This can only be experienced first hand by making visits, talking to the inhabitants, making "case studies" and recording with photographs and film. Various studies of these kinds have been or can be made and the purpose of this work was to lay a slightly more rigorous and complementary factual foundation for future policy making.

The "average" household in Wanathamulla shanty Town is headed by a Sinhalese Buddhist man in his late 30's or early 40's who came from the South-West coast and now lives in a 2 roomed house of 15.20 square metres, earns Rs.250 - 300 per month, has 3 or 4 children and would, given a choice, prefer to stay. But this Report has discovered "diversity", not "averages", and at almost every point, it has been necessary to quote ranges and draw distributions.

Diversity was demonstrated in the Town Plans of which Figure 4 is one example, demonstrated dramatically in the sixteen house plans in Figure 5 and in the analyses of house size, family size, income, in the birth places of household heads and so on.

Even more surprising, on closer investigation, was the discovery that the diversities are not related. If the people with higher incomes built larger houses and had larger households, there would be a "linear diversity" from the "big and rich" to the "small and poor" but this is not the pattern. Figure 19 compares house size with household size and Figure 20 house size with income and both diagrams show a wide "scatter". In both diagrams each spot represents a household and, on the horizontal axis, the area of the house. In the upper diagram, the vertical axis shows the number of occupants. It shows a slight trend towards

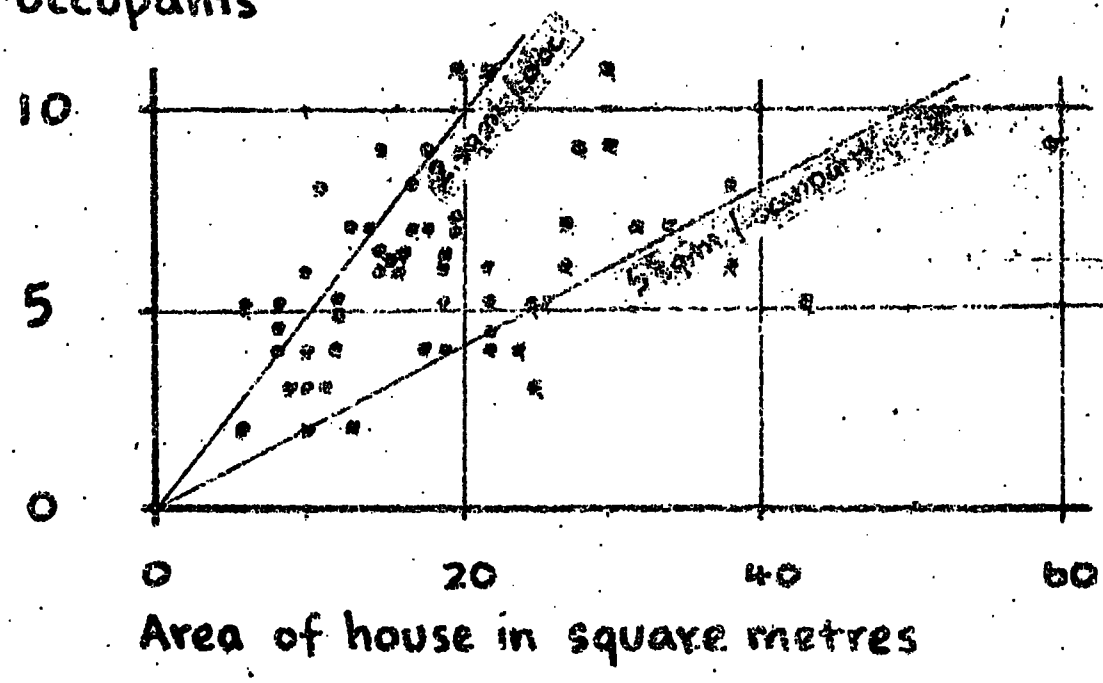
larg households in larger houses but there are several larger households in smaller houses and vise versa. There are people managing with 1.5 square metres (15 sq.ft.) each, barely enough room to lie on a mat, and other people have 8 square metres (80 sq.ft.) each. In the second comparison in Figure 20, the vertical axis shows income and their is virtually no tendency to have a bigger house if you earn more money. This is surely an incredible fact for higher income earners to understand whose status is reflected by their house to a large extent.

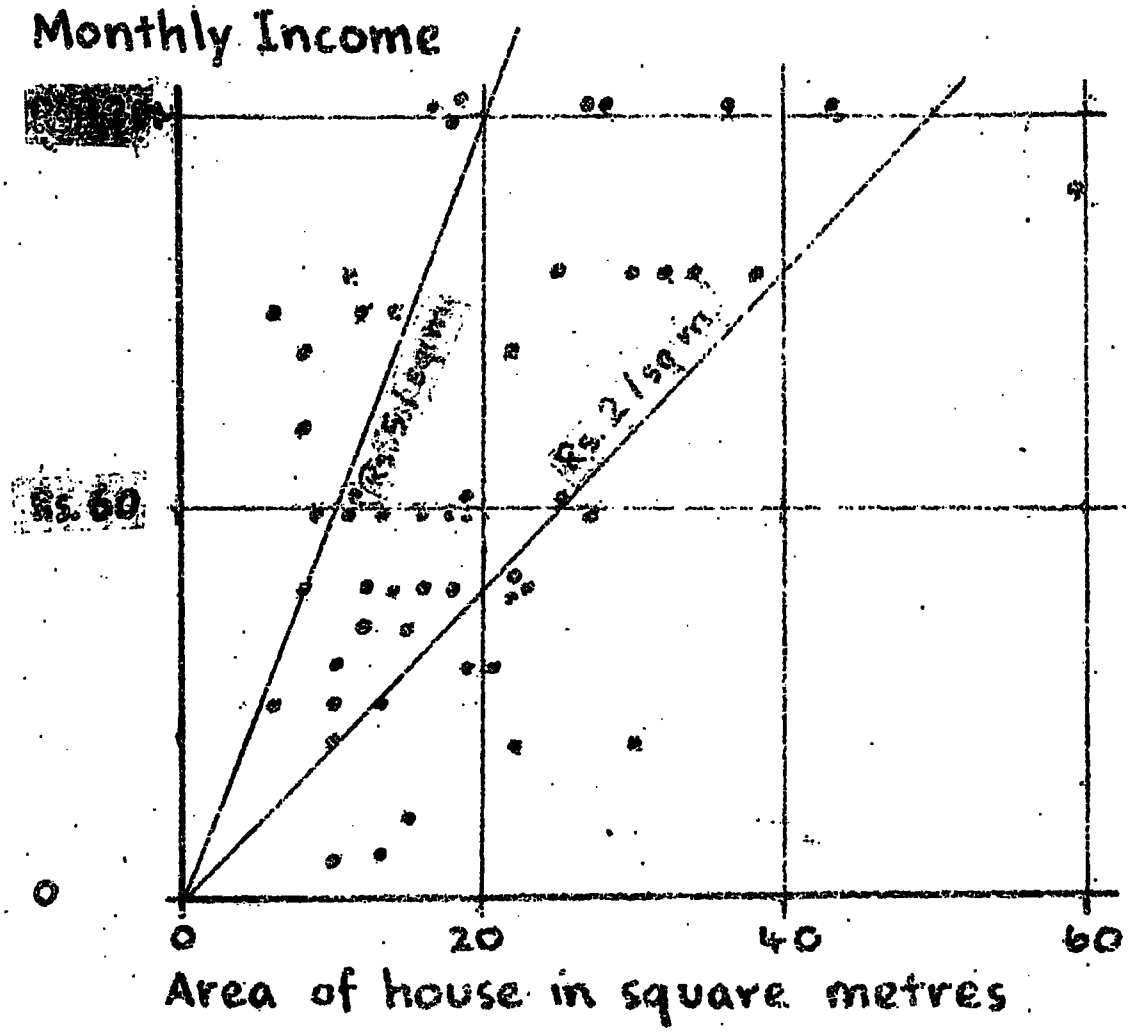
Perhaps this characteristic of "diversity" gives a clue to the failure of mass housing in so many countries Mass housing is characterised by uniformity; each flat is the same size and is related to the others in the same dreary fashion. While planners argue the merits of 600 square feet verses 540, of system building verses rationalised methods, of the economics of multi-storey, the inhabitants of Wanathamulla Shanty Town will live in half the space if they can use outside space as well, live near their employment and run a boutique or keeps a bullock a cart nearby. Their interiors also demonstrate the artithess of the finished rectangular boxes of mass housing and are characterized by individuality and adaptability.

This analytical approach has described what people do given the chance to plan their own environment. When planners look at the results, they see the unhygenic squalor and common poverty of sub-standard unplanned uncontrolled illegal squatting but, before we deal with these problems, perhaps we should also examine the diversity and individuallty that makes people what they are whether they are poor or rich.

Figure 19 and 20

Comparing House Size with Occupants and Income





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SHANTY TOWN QUESTIONNAIRE SURVEY

1 Instructions to Survey Workers

1.1 This Questionnaire is part of a survey of Shanty Towns in the Colombo Area being carried out by the Department of Architecture in the University. The purpose of this survey is to understand living conditions and patterns and the needs and resources of those living in Shanty Towns. In a later stage, various proposals will be made for improvement of these conditions. Individual replies will be kept confidential.

1.2 This Questionnaire should be filled in by the Survey Worker, not by the occupants. One Questionnaire should be completed for each house in the sample (a house is a room or interconnected group of rooms used by a person or group). The Questionnaire should be filled in from the viewpoint of the Principal Occupant even if the interviews are with other. If the house is vacant or is used for purposes other than living, complete the first part as indicated in the Questionnaire.

1.3 Complete as much of the Questionnaire as possible from drawings and observations. The remaining information should be collected by holding "semi-structured interviews" with some of the adults in each house. From two or three such interview/discussions, it should be possible to complete almost all of the answers and add further relevant comments which arise during discussion. If people are reluctant to answer any question, try once more but do not press them further.

1.4 For each question, add relevent comments continuing on the back sheet if necessary. Wherever the reply is 'other', give details. In most cases, replies are coded for subsequent computer analysis.

1.5 Number of Survey Worker:
(as recorded in the Research Project Register)

2 The House (complete this section by observation) ___ ___

2.1 Number of the Survey Area on Project Map: ___ ___

Number of Survey Block within Area on Area Map: ___

Number of House on plan of Survey Block: ___ ___

2.2 Number of houses under the same roof: ___

Area of House in Square Metres(1sq.m.=10sq.ft.) ___ ___

Distance of house from road in metres(1m=3ft): x 10 ___ ___

Number of rooms in house (excluding spaces used only for cooking,storage,toilet or bathing): ___ ___

2.3 Activities other than family living: main: ___

1 = boutique
2 = store
3 = washing
4 = sewing
5 = barber
6 = lodging
7 = bar
8 = other
9 = none

2.4 Roofing Material: ___

1 = cadjan
2 = palmyrah, straw
3 = G.I. Sheets
4 = other metal
5 = Asbestos sheets
6 = tiles
8 = other

2.5 Condition of roof: ___

1 = weatherproof
2 = leaks but does not affect sleeping
3 = sleeping area restricted in heavy rain
8 = Other

2.6 Main Walling Material: ___

1 = cadjan, palmyrah or straw
2 = wattle and daub
3 = G I Sheets
4 = other metal
5 = timber
6 = brick or cabook
7 = concrete
8 = other

2.7 Condition of walls: ___

1 = in danger of collapse
2 = not possible to climb into house
3 = not possible to reach into house
4 = not possible to look into house
8 = other

2.8 Floor material: ___

1 = mud or dung
2 = wood finish
3 = brick or cabook finish
4 = cement finish
5 = concrete slab
8 = other

3 Services (complete this section by observation)

3.1 Type of kitchen: ___
1 = own kitchen within a room in the house
2 = shared "
3 = own kitchen in a seperate attached area
4 = shared "
5 = own detached kitchen
6 = shared "
7 = shared kitchen in another house
8 = other
9 = none

3.2 Cooking fuel: ___
1 = wood 8 = other
2 = sawdust 9 = none
3 = kerosene

3.3 Lighting: ___
1 = bottle lamp
2 = other open flame
3 = shielded flame
4 = pressure lamp
5 = electric light with temporary connection
6 = " permanent "
7 = candle
8 = other
9 = none

3.4 Water supply: ___
1 = tap in house 4 = canal
2 = tap in street 5 = river
3 = well 8 = other

Distance to water supply in metres: x 10 ___ ___

3.5 Nearest Public Toilets:
Distance in metres (99 = further than 990m): x 10 ___ ___
Approximate number of families sharing: x 10 ___ ___

3.7 Usual toilets for adults:
1 = bucket in house 5 = public toilet
2 = bucket latrine 8 = other
3 = pit latrine 9 = none
4 = canal or riverside latrine

Usual toilets for children (coding as above):

3.8 Usual bathing place:
1 = bath in house 4 = well
2 = seperate bathroom 5 = public bath
3 = shared bathroom 6 = canal or river
4 = street tap 8 = other

3.9 Drainage around the house: ___
1 = earth trenches 5 = natural slope
2 = lined channels 8 = other
3 = covered channels 9 = none
4 = pipes

Distance in metres to stagnant water: x 10 ___ ___

4. Interview Information

4.1 If the house is vacant, why? ___
1 = not vacant
2 = occupants moved out recently
3 = occupied seasonally
4 = awaiting repair
5 = landlord wants a higher rent
8 = other
9 = don't know
If vacant or if not used for living, questionnaire ends here.

4.2 Date of first interview: 19 ___ ___
month ___ ___
date ___ ___

Interview visits - tick off 1/2/3/4/5 final number ___

5. Coming to the Shanty Town

5.1 Where was the principal occupant born: ___ ___
(refer to Colombo Zone Map or Sri Lanka District Map: note that Zone 42 = Colombo District outside areas numbered on Zone Map of Colombo City)
88 = abroad 99 = don't know

5.2 From where did the principal occupant come here: ___ ___

When did the principal occupant come here: 1 9 ___ ___
88 = born here 99 = don't know

Why did the principal occupant come here: ___
1 = parents came
2 = wife/husband was here
3 = friends/relations were here
4 = seek employment
5 = children's schooling
6 = small or no rent
7 = enjoy city life
8 = other
9 = don't know

5.3 How did you obtain this house: ___
1 = gift
2 = built it
3 = bought from somebody else in the Shanty Town
4 = " " " outside " "
5 = rented " else in "
6 = " " outside "

How much did it cost to build/buy/monthly rent Rs. ___ ___ ___ ___

6. The Household Structure

6.1 Is the principal occupant: ___
1 = husband with wife
2 = husband only
3 = wife only
4 = bachelor
5 = widower
6 = other

6.2 What is the Nationality of the principal occupant: ___ ___

1 = Sinhalese
2 = Tamil
3 = Burgher
4 = Muslim
5 = other

Does the family go at least once a month to: ___

1 = no place of worship
2 = Buddhist Temple
3 = Hindu Kovil
4 = Muslim Mosque
5 = Christian Church
8 = another place of worship

6.3 What is the constitution of the principal occupant's family who live in the house?

number of children: ___
number of wife's or own parents: ___
ages of three youngest children if under 10 ___
___
___

6.4 Who are the other occupants in the house? (who sleep there at least 4 times a week)

Second family, number of people: ___
Third Family, number of people: ___
(family = two or more consisting of one or both parents with or without unmarried children)

Number of other relations: ___
Number of other friends: ___
Number of lodgers, servants, others: ___

6.5 Age breakdown of occupants

Age of principal occupant: ___ ___
Number of occupants in the following age groups:

0 - 4	___
5 - 9	___
10 - 14	___
15 - 19	___
20 - 24	___
25 - 29	___
30 - 39	___
40 - 49	___
50 - 59	___
60 - 69	___
70 +	___

7. Activities (of the principal occupants family)

7.1 For how many hours a day do your children under 10 play near the house: ___

About how many hours a day are spent indoors apart from sleeping by -

husband	___
wife	___
children	___

How many hours have you spent sitting and talking (apart from during meals) in the last 24 hours: ___

7.2 List the numbers of the houses within this survey block which you have visited socially in the last 24 hours: ___ ___; ___ ___ ; ___ ___ ; ___ ___ ; ___ ___
___ ___; ___ ___ ; ___ ___ ; ___ ___ : Total

How many houses have you visited in the Shanty Town socially outside the survey block: ___

How many other houses have you visited socially:

7.3 During the past month, how many times have you -
shopped at the local market:
shopped at Fort or Pettah:
been to the cinema:
attended social, political or religious meetings:

7.4 Tick the following if one or more members of the household take part

___ hide and seek
___ reading book
___ walking in the park

Total number of ticked activities: ___

7.5 List the numbers of the Zones in Colombo where members of the household have been during the past week: ___ ___; ___ ___; ___ ___; ___ ___; ___ ___;
___ ___; ___ ___; ___ ___; ___ ___; ___ ___; ___

List the numbers of the Districts in Sri Lanka where members of the household have been during the past year:
___ ___; ___ ___; ___ ___; ___ ___; ___ ___;
___ & ___; ___ ___; ___ ___; ___ ___; ___ ___;

Total number of Districts visited:
(in both cases, exclude work visits and passingthrough)

8. Health and Education

8.1 During the past month, how many times have you
visited the Government Dispensary: ___
visited the Ayurvedic Dispensary: ___
visited the Children's Hospital: ___
visited the General Hospital for attention: ___
visited somebody in hospital: ___
used other medical facilities: ___

8.2 How many parents here do you think are now planning their families: ___

1 = all
2 = most
3 = half
4 = some
5 = none
9 = don't know

9. Spending (to the nearest Rs.10) of the principal family.
About how much did you spend last week on
food and cooking : Rs x 10 ___ ___
travel: Rs x 10 ___

9.2 About how much did you spend last month on
repaying loans: Rs x 10 ___
lending: Rs x 10 ___
saving: Rs x 10 ___
clothing: Rs x 10 ___

List other major expenses: ....

..... total Rs x 10 ___

9.3 What is the average annual cost of
re-roofing Rs x 10 ___ ___
What is the average annual cost of other
repairs: Rs x 10 ___ ___

details: .....

What other major improvements have you made to your house since moving in: .....

..... . total Rs x 10 ___ ___

10 Employment and Income

10,1 What is the employment of the main income earner: ___ ___

11 = docks	21 = street hawker
12 = market	22 = factory
13 = bullock cart	23 = agriculture
14 = minor office staff	24 = odd jobs
15 = railway	25 = cook
16 = buses	26 = gardener
17 = building	27 = cleaner
18 = boutique	98 = other
19 = shopkeeper	99 = don't know

10.2 Nature of employment:

1 = permanent	5 = self-employed
2 = temporary	6 = pension
3 = casual but same	7 = temporarily unemployed
4 = casual, varying	8 = other
	9 = don't know

10.3 Usual Location of Employment - Zone Number: ___ ___

Number of miles to usual daily employment: ___

Average weekly income (or monthly/4) of main income: Rs. ___ ___

10.4 Employment of Second Income Earner-

employment (coded as 10.1):Rs ___ ___

nature of employment: ___

usual location - Zone: ___ ___

income: Rs ___ ___

10.5 Employment of Third Income Earner -
employment: ___ ___
nature of employment: ___
usual location - Zone: ___
income: Rs ___

10.6 Weekly (or monthly/4) income from other sources Rs ___ ___

11 Miscellaneous

11.1 Do you leave the house unattended:- ___
1 = almost every day 4 = never
2 = about once a week 5 = other
3 = about one a year 9 = don't know

11.2 How many nights during the past year has the floor been too wet for the whole household to sleep: ___ ___

11.3 Tick if you have the following items -
— storage box —curtains
— cabinet —ceramics
— radio —bicycle
— almirah —sewing machine
— bed

Total number of items ticked: ___

List other valuable items: .....

.....

12. The Future

12.1 Tick if these tasks have been carried out by members of this household -
— carpentry —electric wiring
— masonry —plumbing

Number of tasks ticked: ___

12.2 If you could be given a choice of the following, What would be your first and second preference: 1st ___
2nd ___
1 = stay here
2 = a plot four times the size 15 miles from central Colombo
3 = a small paddy-plot in the Mahaweli
4 = a small farm plot in the Wet Zone
5 = a multi-storey flat in Colombo
6 = a small plot in your home village
8 = other
9 = don't know

2.3 What are the good points about this area that should be preserved: .....
.....
.....
What are the most important improvements needed in this area .....
.....
How much more rent/month could you pay for these:Rs. ___ ___

Additional Notes