Self-Help Practices in Housing: Selected Case Studies

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UNITED NATIONS

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Department of Economic and Social Affairs

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# SELECTED CASE STUDIES

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# PREFACE

This report reviews five case studies from Colombia, El Salvador, Senegal, Ethiopia and the Sudan, describing experiences in the field of self-help and mutual-aid housing.

The Colombian study, which is rather extensive in terms of the number of people who have participated in the various programmes, illustrates how self-help can bring out individual initiative and strengthen family ties. It also shows that people are prepared to devote much attention to housing provided the necessary administrative and technical assistance frameworks are reasonably well established. No less than 80 per cent of the houses in the survey show some form of improvement that the family has undertaken after the completion of the formal aspect of the programme.

The Santa Lucia colony project in El Salvador also illustrates the value of the self-help movement in bringing an adequate standard of housing to the low-income groups. The case study suggests that no other form of housing programme could have brought adequate housing to as large a proportion of the population as has this one.

The Senegal experience, which is one of the earlier experiments in self-help housing, illustrates, among other things, the suitability of self-help and mutual-aid methods in utilizing the considerable amount of idle manpower that usually exists in many of the cities of Africa. Although this project dates back nearly a decade and a half, there is some value in analysing it at this time in order to see what developments may have taken place since the completion of the project.

Within the broad framework of self-help and mutual-aid housing, one can take up a number of subthemes. Thus attention could focus on the nature and extent of the administrative assistance that is required to make such projects a success. Similarly, the question of psychological assistance could be another subtheme, as could the policy that sponsoring agencies adopt in relation to site development. The reader can, no doubt, identify many more.

In the following pages the question of technical know-how in self-help housing will be taken up. In particular, the analysis will deal with the amount of technical know-how that may be required for a successful self-help housing scheme.

It is important to differentiate between two aspects of this question. First, there is the technical know-how that is characteristically induced from external sources, be they architects, engineers or social scientists. Secondly, there is the technical know-how that forms part of the equipment that potential self-help participants bring to the programme. The question, to what extent a family must have "construction" knowledge before it can participate in a self-help housing programme, is a crucial one. The experiences described in the five case studies need to be examined in respect of the amount of information they reveal on this question.

Obviously it will be difficult for a family completely new to the building process to become a successful participant in a self-help housing programme. This being the case, one needs to consider the time required to provide the necessary pre-training in building methods before the participating family can be considered to be equipped with the minimum skills for taking part in a self-help project.

Much more data would have to be collected and an extensive study might have to be undertaken before definite conclusions could be arrived at in regard to this question. The case studies, though by no means conclusive, do show a clear trend. In the Senegal experiment, no less than 30 per cent of the participants had worked in the construction field. The "experienced builders" among the participants were strategically spread out among the subgroups of the mutual-aid society, and, no doubt, they contributed considerably to the success of the projects.

In the El Salvador project, it appears that 20 per cent of the participating families had worked in building construction or related fields. The policy followed there had been deliberately to recruit families with some building background; the number of families with no building experience was kept to a minimum. Those recruited for participation in the self-help project without any building experience were made to supplement the family's fund of skills by employing "skilled labourers". Sometimes these labourers were paid for by the organization and at other times by the family itself.

The survey of self-help housing projects in Colombia did not cover, at least directly, the question of the technical know-how of the participants. But if their educational level can be taken as an indication, we can deduce that a considerable number had studied subjects related to building construction, since 12 per cent of them had had secondary (vocational) and higher education.

Another experience needs to be brought into the picture. The self-help component of the Addis Ababa housing pilot project would probably have been less successful if it had not been linked to that aspect of the project that was completely implemented by a contractor. That contractor, who had been specially selected, provided a substantial amount of technical know-how for the self-help component of the project.

A large number of experiences, so far, suggests that some level of technical know-how must be present and active before self-help housing or mutual-aid housing can be given a better than average chance for success. Exactly what percentage of the participants of any given project or how many within a family need to be already well versed in building construction is difficult to say. If the three case studies are indicative, the percentage should not be less than 25. Further study will, no doubt, throw more light on the subject.

All told, however, self-help housing methods have a considerable potential for mobilizing human resources for the provision of homes for low-income families. But, self-help can only be successful if the families themselves persevere, which they have to do in large measure.

In the El Salvador project, for example, the minimum time required to complete the standard house of the self-help project was a little over eight

months; in Senegal, the period was not much shorter. Thus, families have had to devote nearly all of their leisure time for months to the erection of a house. This cannot be done without a large measure of perseverance on the part of all the members of the family.

The success of self-help projects cannot be measured only in terms of a completed house. The variety of friendly contacts that have been established during the strenuous period of house-building apparently continues to have meaning long after the project is completed. The framework of the mutual-aid association, with little modification, appears to serve various other needs of the communities. Thus, in Dakar, the mutual-aid association established at the time of the conception of the self-help project still exists nearly a decade and a half later, and functions as a vital community force continuing to help bring improvements into the lives of the member families. The same is true for the El Salvador project. Families that have been left destitute, or those who have found themselves in sudden difficulties, have counted upon the existence of the "community" for help and assistance. This "association" was initiated in the context of the self-help housing project.

Difficulties have also been experienced in carrying out aided self-help and mutual-aid programmes. The case studies reveal that frequently the value of the self-help approach is reduced by ideas and innovations that have not been adequately tested.

In Colombia, for example, the way the design of civic centres has been carried out illustrates this problem. The initiators of the Senegalese project in Dakar now agree that considerably larger savings could have been achieved if the house plans had been based on the use of temporary materials. But because of the influence of technical advisors, architects and engineers, the project assumed an overly ambitious scale, which was very dearly paid for.

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## EXPLANATORY NOTES

The following symbols have been used in the tables throughout the report:

Three dots (...) indicate that data are not available or are not separately reported

A dash (-) indicates that the amount is nil or negligible

A blank in a table indicates that the item is not applicable

A minus sign (-) indicates a deficit or decrease, except as indicated

A full stop (.) is used to indicate decimals

A comma (,) is used to distinguish thousands and millions

A slash (/) indicates a crop year or financial year, e.g., 1960/61

Use of a hyphen (-) between dates representing years, e.g., 1961-1963, signifies the full period involved, including the beginning and end years.

Reference to "tons" indicates metric tons, and to "dollars" ($) United States dollars, unless otherwise stated.

The term "billion" signifies a thousand million.

Annual rates of growth or change, unless otherwise stated, refer to annual compound rates.

Details and percentages in tables do not necessarily add to totals, because of rounding.

COLOMBIA

# EVALUATION OF THE SELF-HELP HOUSING PROGRAMMES CONDUCTED BY THE INSTITUTO DE CRÉDITO TERRITORIAL (NATIONAL HOUSING AGENCY)

By the Instituto de Crédito Territorial

CONTENTS

## BACKGROUND

The self-help programmes have been of great importance, not only because of the housing itself but also because of the way in which the settlement project as a whole has developed. Various questions arise in this connexion. How far is the project geared to the way of life of the inhabitants? Are the indices adopted for the municipal services correct? Does a self-help project behave like a neighbourhood? If the project has not worked properly, what principles and assumptions should be adopted for future plans?

Concern over these matters led the Instituto de Credito Territorial (ICT) to make a study of the main self-help housing projects with the following basic aims:

(a) To determine the technical, physical, social and economic characteristics of the projects selected in different parts of the country;

(b) To establish the relationship between those different aspects in order to make a comparison with other sectors;

(c) To establish what common features there are in the development of the different self-help projects, in order to identify the chief positive elements;

(d) To determine what practical guidelines emerge from the survey for use in ICT's future plans.

### Particulars of the system

Under the self-help system, the beneficiary is sold a developed lot in an urban project and provided by the Institute with building materials and technical assistance in putting up his house. The re-payment period is up to 20 years and rates of interest are the lowest charged by the Institute. No initial deposit is required and the recipient is given a period of grace of one year before the first instalment, while he is building his house, in order to avoid straining his budget.

On his lot, the family has to build its house, with its own labour and, in part, using its own money to finance it. The family uses the time it has free during the week or employs skilled workers where necessary, always under the technical guidance and with the social assistance of the Institute.

The family has to begin building the house not later th[illegible] days after the date on which the contract is signed and must take up residence in the house not later than 12 months after the same date. The recipient undertakes to work a certain number of hours a week, particularly on Saturdays and Sundays, in accordance with the work programme drawn up by the Institute's Social Service.

The self-help housing system was formally launched by the Institute in 1959 in the city of Cali, when a series of emergency projects was planned in order to deal with a serious housing problem affecting the poorest families.

Shortly after the first experiments in Cali, new programmes were undertaken in the other cities, and some aspects of the system were varied and modified when local characteristics so required. Table 1, at the end of this paper, shows the scale on which the self-help system is currently operating. The number of units completed under the system is 51,551, which is 46.5 per cent of the total of 110,594 constructed by the Institute up to 1965.

It may be noted that in some towns such as Bogotá, Medellín and Bucaramanga, the system has used the methods of premodulation and prefabrication, also on a self-help basis. The results have been highly satisfactory.

## Projects chosen for the survey

In order to obtain a sufficiently representative sample for the survey, the Institute selected 23 of its projects from all over the country, which had been carried out by the self-help method and were completed and occupied.

The towns and projects selected were the following:

| Town | Project |
|---|---|
| Bogotá | Ciudad Kennedy |
| Barranquilla | La Magdalena |
| Barranquilla | Las Palmas |
| Bucaramanga | Los Arenales |
| Bucaramanga | La Victoria |
| Bucaramanga | La Joya |
| Cali | Aguablanca |
| Cali | Fortaleza |
| Cali | Guabal |
| Cali | Floresta |
| Cartagena | Blas de Lezo |
| Cúcuta | Guaimaral |
| Cúcuta | Juan Atalaya |
| Ibagué | Danubio |
| Ibagué | El Jordan |
| Ibagué | Lopez de Galarza |
| Ibagué | Yuldaima |
| Medellín | Las Playas |
| Medellín | Alfonso Lopez |
| Medellín | Pedregal |
| Medellín | Florencia |
| Montereia | La Granja |
| Pereira | Cuba |

The urban development for the projects are shown at the end of this chapter.

## Preparations for the survey

For the purposes of the survey, questionnaires were drawn up containing questions on social and economic factors, the physical characteristics of the housing and the technical features of the projects. The sample was considered sufficient if it covered a quarter of the project in question, although in some cases it covered 30 per cent. The investigators visited the projects and made objective observations on the spot in addition to collecting the necessary data.

One fact should be borne in mind: although the self-help system has certain common characteristics as regards procedures, finance and methods, the progress of the projects has depended on the economic position of the families in some cases and the policy of municipal governments in others.

The survey revealed the variety of physical factors affecting the development of the projects and the degree of social initiative and extent of communal action in them. Although some have nothing much to show in terms of achievements, this negative aspect should not be stressed, because the positive results can be seen in the enthusiasm for improvement and organization of the community. The Institute's work, moreover, is complementary to that of the community.

# DEMOGRAPHIC ASPECTS

## Family size

This survey of the 23 projects listed above covered a total of 2,218 families, whose average size was 7.6 persons. The highest averages were to be found in the cities of Medellín (10.1 persons per family) and Bucaramanga (between 8.0 and 9.3). Table 1 shows the family size.

If we analyse this table, we will find a considerable difference between the average family size and that obtained from the Institute's registers (7.0) or the national average (5.6) calculated by the National Administrative Department of Statistics.

It is interesting to note the origin of the householders. Some come from the city itself (less than 25 per cent), some from neighbouring villages and some from other departments. Almost all are originally from the countryside, but have been in the city for more than three years. Some families come from slums, most come from tenements and others from relatively acceptable housing. This is reflected in different kinds of cultural behaviour, which are difficult to integrate in the short run.

As regards the persons making up the family unit, according to table 2 the survey covered a total sample of 13,897 persons. In order to study the number of "other persons" in the family and to estimate more or less accurately the prevalence of subletting and other factors likely to have a bad effect on the housing situation, this total was broken down into two groups, the first being children and the second being parents and other persons.

The over-all results show normal stability, children accounting for 72.5 per cent of the family membership. The remaining 27.5 per cent are parents

and others, from which it may be deduced that "outside" persons living with the family account for about 10 per cent. Although the survey did not reveal the exact reasons for this phenomenon, it appears that the typical self-help family continues to grow after acquiring its house, even if it is already large, which, it may be assumed, is due to the rise in social position or "status" entailed by possession of one's own house. This does not, of course, prevent subletting, despite the small number of rooms in the typical self-help house.

## Population by age and marital status

This part of the survey was concerned with the stability of the family group. The results are shown in table 3. As far as the age of the head of the family is concerned, a high percentage were young: 20 per cent were under 30 and 44 per cent under 40; only 10 per cent were over 50.

As for their marital status, the sample gave results which may be regarded as normal for Colombia: 79.9 per cent were married in accordance with the Catholic rites, 7.0 per cent were unmarried, 4.5 per cent were widowed and 8.6 per cent were living in free union. It should be noted that the Institute does not discriminate in this respect, accepting an established family whatever its matrimonial status.

There are, of course, differences between the various regions. Barranquilla, Cartagena and Cali have the lowest proportion of married persons, about 72 per cent, while Medellín has 93 per cent. As for the sex of the heads of the families, 90 per cent are men and 10 per cent women.

The figures given in table 3 provide clear evidence of family stability in every respect, despite the relatively high percentage of free unions in some cities. The conclusion seems to be that a family that wants to put down roots, for example, by building self-help housing, is already established and has permanent characteristics.

## School age population

The study of this aspect, as indicated in tables 4 and 5, was divided into two parts: one on the school ages of the current inhabitants and the other on the kind of education the adults had had.

In the 2,218 families (table 5) making up a population of 13,897 persons, there are 3,685 children (26 per cent) under six, i.e., under school age, 2,165 (16 per cent) of secondary school age and 3,384 (24 per cent) between the ages of six and 11, i.e., of primary school age. It will thus be seen that a high percentage of the population is young.

Out of the 3,384 children of school age, 2,670, or 80 per cent, attend school, while the remaining 20 per cent do not. These figures for primary school attendance in the Institute's projects are higher than the national and urban averages. They are much higher, of course, than in the slum districts of the country's larger towns. It can be said that the efforts made by the Ministry of Education under its school plan over the past four years have yielded good results.

Of the 2,165 children of secondary school age, 1,577, or 71 per cent, attend school. This proportion, though far from ideal, is also higher than the national and urban average.

The proportion of the total number of children under 18 attending school is 76.5 per cent. It should be noted that there are no facilities for children under school age and that the shortage of classrooms is aggravated by the fact that some schools operate in unsuitable premises.

Table 5 shows the level of education of the 4,505 adults included in the sample. Of these, 85.3 per cent attended primary school only, 12.5 per cent attended secondary school and 2.2 per cent had some higher education.

To sum up, there is a pressing need for day-care centres and vocational training schools which will stimulate technical and industrial development and give the poor an opportunity to acquire skills.

## ECONOMIC ASPECTS

### Monthly family income

As mentioned above, the self-help housing projects benefit only urban low-income groups. In other words, the people living there are poor, so much so that the only way they can get a house is by taking part in a self-help project.

In addition, as stated in the chapter on population, these families have the largest number of dependants.

The survey showed the range of monthly family income, with figures which speak for themselves: 31.3 per cent earn less than 500 pesos, 29.6 per cent between 500 and 750 pesos and 22.6 per cent between 750 and 1,000 pesos. In other words, 83.5 per cent earn less than 1,000 pesos and 16.5 per cent more than that amount, only 1.5 per cent earning more than 2,000 pesos.

The most important conclusion to be drawn is that in its housing policy the State succeeded in reaching the very poor, who before 1960 had no opportunity to buy a house. It can be said that this system has given the poorest families of Colombia such an opportunity for the first time and that it has therefore entirely fulfilled its purpose.

Of course, from another point of view, the poverty of these families, the austere circumstances in which they live and their low purchasing power are self-evident. This is a national problem, which is common in Latin America and characteristic of under-developed countries.

It appears, moreover, that in 66 per cent of the cases the family income is earned solely by the head of the family, while in 34 per cent there are other sources of income. Considering the large number of persons in each family, it is obvious what a heavy economic burden the head of the family bears. In addition,

the income figures for self-help housing projects are lower than the average figures recorded by the Institute in the national housing inquiry. The inquiry showed that some 76 per cent of families have incomes of less than 1,000 pesos a month, while in the self-help projects the proportion rises to 83.5 per cent.

The survey gives estimates of per capita monthly income: 8 per cent earn less than 50 pesos a month, 66.5 per cent between 50 and 150 pesos and 25.5 per cent over 150 pesos. This means that 74.5 per cent of the people living in these projects have a monthly per capita income of less than 150 pesos, which is regarded as the minimum for a tolerable standard of living. This shows the prevailing low level of living and limited purchasing power which, moreover, is common in many other sectors of the country.

### Economically active and inactive population

This aspect of the survey, which deals with matters closely connected with income, confirms in various ways what has been said about the low level of living. Among the 2,218 families with a total of 13,897 members, 3,443 persons, or 25 per cent of the total, are economically active.

On the average, 1.6 persons in each family are gainfully employed. These figures are extremely low, particularly considering the high average family size of 7.6 persons. Medellín and Barranquilla, which are industrial cities, have the highest figures, while Cúcuta and Ibagué have the lowest.

### Employment

The amount of unemployment was difficult to establish, because of the effect of concealed employment, which wholly absorbs a sector of the population without permanent or specific employment.

The most common category among the heads of the families was "employee", which accounted for 23.7 per cent of the different activities covered. This group included policemen, workers in shops, office workers etc.

Other features that need to be analysed are the relatively low percentage of manual workers (16.1 per cent) which is directly due to the special conditions in each city, and the figure for "independent workers", which really means street vendors and the like.

## SOCIAL AND CULTURAL ASPECTS

### Use of housing

This part of the survey is concerned with the use to which the housing built by self-help is put, as compared with its original purpose.

As explained elsewhere, the machinery of the self-help system and the limited opportunities it offers oblige the householder to make his own arrangements for building his house and to use his own labour for the purpose. He gets financial

aid and technical guidance from the Institute. Nevertheless, after the house has been built, the owner usually improves and adds to it, trying to adapt it to his basic needs, in accordance with his traditional way of living. He adds extra rooms, often upsetting the original plans or changing the facades with colours or coverings which are not those originally visualized by the planner. These extensions are influenced by increases in the size of the family, the possibility of income from a sublease and the use of premises for commercial purposes.

The most usual practice is to open stores and workshops, types of business which are easy to start at this social and economic level.

Table 6 gives information on the use to which the different parts of the housing are put. When the situation is described as "abnormal", it means that the room or patio is not used as such or that alterations have been made in the original plan, or even that the areas altered have been switched around.

The data in table 6 show that 67 per cent of bedrooms, 50.5 per cent of kitchens, 56.4 per cent of dining rooms, 45.6 per cent of bathrooms and 58 per cent of patios are properly used, i.e., that on the average 56 per cent of the different areas are fulfilling the functions for which they were designed, while 44 per cent have undergone alterations.

This means that architectural and urban development plans must be revised in order to adapt them more closely to the social and cultural circumstances of these families.

An attempt was made to establish the degree of overcrowding in the housing, and it was found that there was an average of 3.4 persons to a bedroom, which is relatively high, but is an improvement on the figures of 5.0 to 7.0 for the tenements so common in the big cities, even if it is not ideal.

## Needs felt by the community

The inquiry revealed a great variety of opinions and a lack of any general agreement on what services were most important. The main ones, as shown in the survey, were the following:

(a) Roads. Some emphasized the need to pave, repair or macadamize roads. Since 1964 the Institute has made sure that new projects, including self-help projects, are fully paved;

(b) Water supply and sewerage. The need for these is felt in the first projects built, where there were communal latrines and sinks. The water mains and sewers for these projects are in the process of construction, in accordance with plan 10 (Project Improvement). In other cases, the problem is due to deficiencies in the water supply of the cities in question;

(c) Schools. Despite the high proportion of the population of school age, only 9.2 per cent asked for more school facilities;

(d) Parks. Practically none of the projects surveyed have any parks, but only 6.7 per cent of the population felt the lack of them.

The opinions discussed here reflect the immediate needs of the family or the house, such as roads, water supplies and schools. Other municipal services usually regarded as essential for any neighbourhood, however, were scarcely mentioned by those answering the inquiry.

Despite the low incomes of almost all the residents of these projects, whose living borders on the subsistence level, the impact that home-ownership has within the social group is quite apparent. In addition to giving the families security, it raises their social position and increases their economic stability.

One of the questions asked in the survey was whether the respondent was satisfied to live in the project. The results were very good, since 86.5 per cent said that they were. The most common reason given was the fact of home-ownership. The remainder may have declared themselves dissatisfied because of the lack of some public or municipal services.

### Community activities

The results of the inquiry showed that community life in these projects is very limited, not only because of the lack of communal facilities, which is critical in many cases, but because the families are unaware of the advantages of such facilities and of an organized community. The self-help housing project, moreover, does not seem to have many of the characteristics that a neighbourhood should have. The idea of a neighbourhood implies that districts or settlements of a certain size - 200 dwellings or more - should be autonomous and self-sufficient as regards the "public facilities and the conditions required by the family for its comfort and normal living within the immediate area of it home".

## HOUSING AND PUBLIC SERVICES

### Condition of the houses

It was felt necessary to establish what efforts were being made to improve or enlarge dwellings.

The inquiry showed the condition of the houses two or three years after the basic unit was handed over to the occupier. The data are very satisfactory: 23 per cent of the dwellings have remained in the same condition as when handed over by the Institute; 43 per cent have been improved and 34 per cent have been enlarged. Thus over 75 per cent of the families have used their resources to improve their new houses.

### Public services

It has already been said that the first projects constructed under this system had only a minimum of public services. In some cases communal sinks

served as a water supply and latrines were installed in place of sewerage. The Institute is remedying this situation in collaboration with the muncipal authorities.

Of the 23 projects investigated, it was found that only 11 had an adequate water supply. The supply was clearly deficient in the remainder, because of defects in the central distribution. In the small number of projects where the supply is not yet connected up to houses, it was found that communal sinks and latrines are not advisable, because they do not work properly anywhere and they are not maintained and used in such a way as to be hygienically acceptable.

As far as roads are concerned, one obvious feature is the importance of paving. While it was not intended to pave the roads in the first self-help projects, in those in which paving has been carried out the improvement in the project has been striking. In practice it can be said that a paved project is one which has made considerable progress. About 70 per cent of the 23 projects surveyed did not have properly paved roads and it is the Institute's intention, within the limits of its financial resources, to expand the road improvement programmes in these sectors.

## COMMUNAL FACILITIES

### Health

Communal health facilities were found to be very limited for the following reasons. First, where there is a health centre, it is inadequate for those it is intended to serve. Secondly, scientific equipment and personnel are lacking. Thirdly, some projects with large populations require better services, such as hospitals, clinics etc.

There are 15 health centres in the 23 projects, which provide an inadequate service, except those at Ciudad Kennedy in Bogotá and El Guabal in Cali, where the standard is satisfactory. In these two projects, there are health centres sponsored by private organizations, which have taken them over, providing them with equipment and professional staff, who do satisfactory work.

In the other eight projects, there are no health centres. Other health facilities, such as hospitals, maternal and child welfare clinics etc., are not to be found in any of the projects. In Ciudad Kennedy, which is an exception, there are four private doctors' consulting rooms, operating individually.

The following table shows the existing health services in these projects:

| Town | Project | Health centres | Private doctors' consulting rooms |
|---|---|---|---|
| Bogotá | Ciudad Kennedy | 1 | 4 |
| Barranquilla | La Magdalena | 1 | |
| Barranquilla | Las Palmas | - | |
| Bucaramanga | Los Arenales | 1 | |

| Town | Project | Health centres | Private doctors' consulting rooms |
|---|---|---|---|
| Bucaramanga | La Victoria | - | |
| Bucaramanga | La Joya | 1 | |
| Cali | Aguablanca | - | |
| Cali | Fortaleza | 1 | |
| Cali | El Guabal | 1 | |
| Cali | N. Floresta | 1 | |
| Cartagena | Blas de Lezo | 1 | |
| Cúcuta | Guaimaral | 1 | |
| Cúcuta | J. Atalaya | 2 | |
| Ibagué | Danubio | 1 | |
| Ibagué | El Jordán | 1 | |
| Ibagué | L. de Galarza | - | |
| Ibagué | Yuldaima | - | |
| Medellín | Las Playas | - | |
| Medellín | Alfonso López | - | |
| Medellín | Pedregal | - | |
| Medellín | Florencia | - | |
| Montería | La Granja | 1 | |
| Pereira | Cuba | 1 | |
| | Total | 15 | 4 |

## Educational services

For the purposes of this study, the existing schools were divided into two categories: "adequate" schools, i.e., facilities constructed specifically for use as schools, and "inadequate" schools, i.e., those operating in unsuitable premises, generally with very little space, which are part of the housing made available by the Institute and are lived in as well as used as classrooms. There are 66 adequate schools, with 518 classrooms, and 76 inadequate ones, with 142 classrooms. Assuming 40 pupils per class, these 660 classes are attended by 26,400 pupils. It should be borne in mind that each school operates on two daily shifts, and that the total capacity is therefore 52,800 pupils.

The population of the 23 projects, with 33,433 dwellings, is 240,000, of whom some 25 per cent, i.e., 60,000, are considered to be of school age, which means that approximately 80 per cent of the children of school age attend school.

These figures, although higher than the national urban average, are not ideal, and the situation is aggravated by the two-shift system that each school has to follow, which lowers the quality of the education.

In addition, the school plays only a small role as a neighbourhood centre for cultural and sports activities in the project.

There are no trade schools nor are any planned, except one large one for a school centre in Ciudad Kennedy, which is sponsored by the Ministry of Education.

In some community centres there are small libraries (two cases) and in the El Guabal project in Cali there is a sizable reading room. Cultural activities are thus conducted on a very small scale.

The schools found in these projects were the following:

| Town | Project | Number of adequate schools | Number of inadequate schools |
|---|---|---|---|
| Bogotá | Ciudad Kennedy | 27 | 21 |
| Barranquilla | Las Palmas | 3 | 4 |
| Barranquilla | La Magdalena | - | - |
| Bucaramanga | Los Arenales | 3 | - |
| Bucaramanga | La Joya | 1 | - |
| Cali | Aguablanca | 2 | 3 |
| Cali | Fortaleza | 3 | - |
| Cali | El Guabal | - | - |
| Cali | N. Floresta | 1 | - |
| Cartagena | Blas de Lezo | 2 | 8 |
| Cúcuta | Guaimaral | 2 | - |
| Cúcuta | Juan Atalaya | 4 | 9 |
| Ibagué | El Danubio | 3 | 3 |
| Ibagué | El Jordán | 3 | 4 |
| Ibagué | López de Galarza | 2 | 2 |
| Ibagué | Yuldaima | - | 3 |
| Medellín | Las Playas | 1 | - |
| Medellín | Alfonso López | 2 | 6 |
| Medellín | El Pedregal | 2 | 2 |
| Medellín | Florencia | - | 4 |
| Montería | La Granja | 5 | 7 |
| | Total | 66 | 76 |

## Civic centres and commercial facilities

The factors considered in analysing the commercial situation were the number and type of establishments and their location in the project as a whole.

These self-help projects were planned with the only town planning indices available, i.e., those used in Europe and the United States of America. How valid are these indices? The number of persons per family in these projects is as much as twice that in the developed countries, which logically would imply different models.

It is not surprising, therefore, that the planners have found that these projects have not developed along the lines they intended and that the "spontaneous" development of the projects departs from the theoretical principles of urban development. In addition, the Institute has not been able, because of economic difficulties, to build the planned civic centres or provide commercial services. It is presumed that these services will be provided by public and private local bodies which have an interest in doing so.

But municipal authorities face the same or worse financial difficulties and the self-help projects do not attract private business. There are exceptions in some projects, such as Ciudad Kennedy, where private enterprise is building a supermarket and two cinemas and there are some commercial premises which have been built for that specific purpose. In the survey, it was established that no civic centre was functioning as such. There is a similar lack of green belts, parks and recreational areas. The residents do not know how to develop the free areas and do not realize what use could later be made of them.

Most of these civic centres were planned as if for developed countries, where the family car plays a leading role. This is obvious from the fact that the civic centre is self-contained, away from the main streets, and functions like the familiar shopping centres in other countries.

As regards their communal and commercial services, the projects have followed the pattern of the villages, where the chief centre of attraction is "main street" and the inevitable central square, which has the drawback that the projects in question do not have the traditional Spanish plaza.

In all the projects studied, "spontaneous" commercial and artisan enterprise have sprung up along the streets with most traffic - buses mainly - and the spaces set aside for civic centres have been neglected.

These commercial enterprises were classified into three groups:

(a) Shops, which are the most common and are always part of a dwelling;

(b) Artisan enterprises;

(c) Other establishments, such as bakeries, hairdressers, ice-cream stalls etc., which perform a specific commercial function different from that of a shop.

The shops in the projects are of the traditional kind commonly found in Colombia.

In most cases, the shop contains a poor selection of articles for immediate consumption, with fittings that are easy for the owner to install.

The survey showed that shops account for 42 per cent of the total number of establishments. Next in importance are artisan enterprises and some small industrial establishments accounting for 18 per cent, and then other establishments with 40 per cent, these being artisan activities using family labour. Ten per cent of all dwellings are used for something other than purely residential purposes.

The concentration of commercial establishments, moreover, tends to be greatest in the oldest parts of the projects. The sections occupied first have a greater proportion of such establishments than those occupied later.

The number of commercial establishments found and their relation to the total number of dwellings was as follows:

| Town | Project | Number of dwellings | Number of commercial establishments | Commercial establishments as percentage of dwelling |
|---|---|---|---|---|
| Bogotá | Ciudad Kennedy | 7,104 | 1,429 | 20.1 |
| Barranquilla | La Magdalena | 1,279 | 155 | 6.3 |
| Barranquilla | Las Palmas | 1,086 | ... | ... |
| Bucaramanga | Los Arenales | 802 | 74 | 9.2 |
| Bucaramanga | La Victoria | 237 | 25 | 10.5 |
| Bucaramanga | La Joya | 871 | 83 | 9.5 |
| Cali | Aguablanca | 1,740 | 130 | 7.5 |
| Cali | Fortaleza | 1,651 | 97 | 5.9 |
| Cali | El Guabal | 2,278 | 136 | 5.9 |
| Cali | N. Floresta | 1,900 | 123 | 6.5 |
| Cartagena | Blas de Lezo | 1,601 | 128 | 7.9 |
| Cúcuta | Guaimaral | 1,194 | 93 | 7.8 |
| Cúcuta | J. Atalaya | 2,528 | 129 | 5.1 |
| Ibaqué | Danubio | 491 | 22 | 4.5 |
| Ibaqué | El Jordán | 993 | 107 | 10.8 |
| Ibaqué | L. de Galarza | 313 | 50 | 15.9 |
| Ibaqué | Yuldaima | 463 | 24 | 5.2 |
| Medellín | Las Playas | 560 | 25 | 4.5 |
| Medellín | Alfonso López | 715 | 54 | 7.5 |
| Medellín | Pedregal | 1,348 | 103 | 7.6 |
| Medellín | Florencia | 665 | 54 | 8.1 |
| Montería | La Granja | 2,451 | 249 | 10.1 |
| Pereira | Cuba | 1,163 | 199 | 17.1 |

The proportions vary from town to town and with the size of the projects. In Ciudad Kennedy, Bogotá, the number of shops is very high - 20.1 per cent. It is not possible for one in every five houses to maintain a viable commercial establishment and it must be concluded that these family businesses simply continue to exist whether they earn anything or not. This situation is to be found in the blocks that have been put up by the self-help system, where the poorest families live. The same is not true of blocks containing multifamily dwellings or houses built on contract, where there is obviously a smaller proportion of "spontaneous" commercial establishments.

Apart from Ciudad Kennedy with its very high figure, the general situation is fairly uniform, with "spontaneous" commerce in between 5 and 10 per cent of the dwellings.

It is necessary to stress the rethinking the Institute has been doing recently in its new programmes. This has led to a new approach to the civic centre, which departs from the traditional models of industrialized countries. The civic centre cannot go on being treated as an island far away from the project's busiest centres of attraction (bus routes), when more than 98 per cent of the inhabitants have no cars of their own. A good example of this new approach to communal facilities is to be found in the new developments at Tímiza in Bogotá, El Socorro in Cartagena and La Flora in Cali, which are soon to be built.

There is evidently a need to promote the co-operative system. If instead of the small shops, which are growing up like mushrooms in the projects and whose existence is also precarious, there were supermarkets in the form of properly run and well-situated co-operatives, the families in the projects would greatly benefit. The survey revealed a complete absence of co-operatives except in Ciudad Kennedy in Bogotá and the El Guabal project in Cali.

Administrative services, such as municipal offices, post offices, telephones, police stations etc., are few and far between. In only seven of the 23 projects in the survey were there police stations. There are post offices in two projects.

The recreational and social welfare facilities are also very limited. Three nurseries and day-care centres are planned in the Bucaramanga projects and one at Pereira. The El Danubio project at Ibagué has the only day-care centre which is operating properly.

Another matter requiring immediate action in these self-help projects is to encourage the planting of trees and grass. Parks and green areas were strikingly absent in almost all the projects. In order to remedy this situation, a project improvement programme is being undertaken, through the World Food Programme, with very good results.

With four exceptions, the projects had religious facilities, despite the fact that in most cases the buildings used for the purpose were poor or improvised. The great influence that spiritual leaders can exercise on the development and organization of communities should not be overlooked. The few social welfare organizations which help the people of the project have almost always been organized through the church.

## Transport and roads

The last part of the survey was concerned with the influence of roads and the volume of traffic in the projects. In each project, the entry and exit points for vehicles were studied and the volume of traffic at peak hours was worked out. After the number of vehicles per hour had been established in each project, the percentage of the total traffic on each road was calculated.

Of the 23 projects, this report includes graphs for Ciudad Kennedy in Bogotá, Blas de Lezo in Cartagena, Las Palmas and La Magdalena in Barranquilla and El Jordán in Ibagué, as the most representative examples.

Ciudad Kennedy had the most traffic: 463 vehicles per hour on its main artery and between 13 and 20 vehicles per hour on smaller streets. Streets inside blocks have less than 10 vehicles per hour.

The Blas de Lezo project has a maximum of 102 vehicles per hour and on the least travelled cross streets, eight vehicles per hour. The other internal roads which serve the blocks directly have less than five vehicles per hour.

In the Las Palmas and La Magdalena projects, the heaviest traffic is found in one street with 280 vehicles per hour while the less travelled streets are down to 24 vehicles per hour. Here again, the block streets have less than 10 vehicles per hour. In the El Jordán project, the greatest density was found in one street with 146 vehicles per hour and the lowest was 17 vehicles per hour. Once again the block streets had well below 10 vehicles per hour.

These figures confirm the statments made in the previous chapter. The development of the self-help projects has not followed the original plans nor has it conformed to the specifications that many municipal authorities have laid down. Some require the Institute to meet the same specifications in these projects as those laid down for luxury housing districts, with the same costs and taxes.

The road study shows that about 50 per cent of the streets are superfluous. There is no point in building a series of roads that are going to be used by less than 10 vehicles per hour at peak periods, particularly when, as stated earlier, less than 2 per cent of the inhabitants of these areas have their own cars.

More consideration should therefore be given to the roads that are to serve self-help housing projects. Public transport by bus is the rule in these projects, not the car, as in developed countries.

## CONCLUSIONS

1. The self-help system, despite the understandable shortcomings to be found at the start of any new system, has been Colombia's greatest step forward in its attempts to solve a serious housing problem, because it has lowered unit costs and made use of valuable human resources as a labour force, thus bringing into the housing market a large section of the population which was formerly marginal in this respect. Thus one of the goals set in the general development plan adopted

by the national Government has been achieved. About 52,000 families have got housing by this system in less than six years.

2. According to the results of the survey, 77 per cent of the dwellings have undergone very considerable extensions and improvements, which means that there has been a welcome channelling of family savings into housing.

3. The instalments which the house-owners pay on their houses, being some 20 per cent less than the rent they used to pay, free a considerable part of their income, which they can now use to purchase goods and services, with great benefit to the national economy.

4. The work done on the projects by the Institute has been welcomed almost unanimously. Despite the limitations of services and communal facilities in many of them, 86.5 per cent of the families interviewed said that they were satisfied to live in the projects.

The Institute should therefore continue these programmes, trying to correct the mistakes of the past.

5. The survey established the need to intensify and give better guidance to the Institute's educational campaign through the Social Service, in order to utilize to the maximum a range of latent skills present in these projects. They contain human material of exceptional value.

6. A new approach is needed to the planning of civic centres for the project. The development models and indices for services connected with housing must be revised and adapted to the characteristics of the families in question and to their economic and social circumstances.

7. Community organization, the cornerstone of progress in these projects, has not received due attention. The families must be involved in a more vigorous kind of communal life if the development of the project is to be well balanced.

8. There is an urgent need to undertake a co-operative organization programme. Credit and consumer co-operatives would not only help to avoid the proliferation of unproductive shops, but would also alleviate to a great extent the economic difficulties caused by low family income.

9. The Institute's new plans for self-help housing should always include water supply and sewerage connected to houses. The system of communal sinks and latrines has not been satisfactory and it is very uneconomical to provide such services after the housing has been built and occupied.

10. One of the most urgent needs in all these projects is for green areas, parks and kindergartens.

Without proper courts, without trees, without green grass, these projects will always be unfinished, with no life of their own, providing no opportunity for healthy recreation.

Vigorous impetus should be given to the project improvement plan and all civic bodies should be encouraged to co-operate in this campaign.

11. The new projects should give special attention to the need to establish a rational and properly organized system of roads, in order to avoid unnecessary cost to the house-owners. The new plans must give greater importance to walks for pedestrians and roads which carry very little traffic.

12. As a corollary to this, municipal authorities must be asked to change the specifications they lay down for roads in these residential areas for poor people. It is absurd that the same specifications should be applied to them as to luxury districts, as is happening in some cities.

13. Attention should be given to the possibility of the Institute following policy that will attract private enterprise, in order to interest it in providing commercial, cultural, recreational, amusement and other facilities.

Table 1. Area, total population and number of dwellings of projects analysed

| Town | Project | Dwellings planned | Dwellings occupied | Average number of occupants per dwelling | Total population | Area (hectares) |
|---|---|---|---|---|---|---|
| Bogota | Ciudad Kennedy | 8,922 | 7,104 | 8.1 | 57,542 | 290.85 |
| Barranquilla | La Magdalena | | 1,279 | 7.5 | 9,592 | 43.72 |
| Barranquilla | Las Palmas | | 1,086 | 7.0 | 7,602 | 49.96 |
| Bucaramanga | Los Arenales | | 802 | 8.0 | 6,416 | 19.22 |
| Bucaramanga | La Victoria | | 237 | 9.3 | 2,204 | 4.00 |
| Bucaramanga | La Joya | | 871 | 8.6 | 7,491 | 27.80 |
| Cali | Aguablanca | 1,740 | 1,740 | 7.6 | | 72.70 |
| Cali | Fortaleza | | 1,651 | 6.0 | 9,906 | 60.75 |
| Cali | Guabal | | 2,278 | 7.1 | 16,174 | 66.66 |
| Cali | Nueva Floresta | 2,100 | 1,900 | 7.4 | | 82.60 |
| Catagena | Blas de Lezo | 1,743 | 1,601 | 7.3 | 11,687 | 80.00 |
| Cucuta | Guaimaral | | 1,194 | 6.3 | 7,522 | 34.38 |
| Cucuta | Juan de Atalaya | | 2,528 | 6.6 | 16,684 | 60.67 |
| Ibague | Danubio | 579 | 491 | 8.4 | 4,124 | 17.72 |
| Ibague | El Jordan | 1,382 | 993 | 7.2 | 7,150 | 43.26 |
| Ibague | Lopez de Galarza | 345 | 313 | 6.6 | 2,066 | 11.93 |
| Ibague | Yuldaima | 463 | 463 | 7.9 | 3,658 | 14.00 |
| Medellin | Las Playas | 656 | 560 | 10.1 | 5,656 | 29.86 |
| Medellin | Alfonso Lopez | 769 | 715 | 9.0 | 6,435 | 38.40 |
| Medellin | Pedregal | 1,574 | 1,348 | 9.5 | 12,806 | 68.90 |
| Medellin | Florencia | 840 | 665 | 9.5 | 6,317 | 52.70 |
| Monteria | La Granja | 3,151 | 2,451 | 8.5 | 20,833 | 140.00 |
| Pereira | Cuba | | 1,163 | 7.8 | 9,071 | 48.28 |

Source for all tables: Instituto de Crédito Territorial, Office of Planning and Statistics.

Table 2. Persons per family

| Town | Project | Number of families | Children | | Others | | Total number of persons (1+2) |
|---|---|---|---|---|---|---|---|
| | | | Number (1) | Percentage of total | Number (2) | Percentage of total | |
| Barranquilla | La Magdalena | 24 | 125 | 74.1 | 50 | 28.6 | 175 |
| Barranquilla | Las Palmas | 189 | 820 | 67.9 | 388 | 32.1 | 1,208 |
| Bucaramanga | Arenales | 91 | 527 | 78.9 | 141 | 21.1 | 668 |
| Bucaramanga | Antonia Santos | 24 | 129 | 62.6 | 77 | 37.4 | 206 |
| Bucaramanga | La Joya | 94 | 586 | 72.9 | 218 | 27.1 | 804 |
| Bucaramanga | Nueva Granada | 29 | 167 | 72.9 | 62 | 27.1 | 229 |
| Cali | Aguablanca | 115 | 561 | 68.7 | 256 | 31.3 | 817 |
| Cali | Fortaleza | 197 | 910 | 76.0 | 288 | 24.0 | 1.198 |
| Cali | Guabal | 215 | 1,202 | 78.5 | 330 | 21.5 | 1.532 |
| Cali | Nueva Fortaleza | 131 | 667 | 78.7 | 180 | 21.3 | 847 |
| Cartagena | Blas de Lezo | 263 | 1,328 | 72.1 | 589 | 27.9 | 1,917 |
| Cucuta | Guaimaral | 135 | 641 | 75.1 | 213 | 24.9 | 854 |
| Cucuta | J. Atalaya | 223 | 380 | 83.9 | 73 | 16.1 | 453 |
| Ibague | Danubio | 96 | 444 | 64.3 | 246 | 35.7 | 690 |
| Ibague | El Jordan | 178 | 362 | 54.7 | 299 | 45.3 | 661 |
| Ibague | Lopez de Galarza | 60 | 224 | 58.0 | 162 | 42.0 | 386 |
| Ibague | Yuldaima | 79 | 368 | 71.2 | 149 | 28.8 | 517 |
| Medellín | Las Playas | 75 | 629 | 85.6 | 106 | 14.4 | 735 |
| Total | | 2,218 | 10,070 | 72.5 | 3,827 | 27.5 | 897 |

Table 3. Age and marital status of heads of families
(Percentage)

| Town | Total number of heads | Age of heads | | | | Marital status of heads | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Up to 30 | 30 to 40 | 40 to 50 | Over 50 | Unmarried | Married | Widowed | Other |
| Barranquilla | 24 | 16.6 | 54.2 | 29.2 | | 4.2 | 75.0 | 4.2 | 16.6 |
| Barranquilla | 189 | 26.4 | 50.3 | 12.7 | 10.5 | 4.2 | 73.0 | 5.3 | 17.5 |
| Bucaramanga | 91 | 12.1 | 41.8 | 39.6 | 6.5 | 17.6 | 79.1 | 3.3 | - |
| Bucaramanga | 24 | 12.5 | 33.3 | 33.3 | 20.9 | 8.3 | 87.5 | 4.2 | - |
| Bucaramanga | 94 | 18.2 | 37.2 | 27.6 | 17.0 | 10.6 | 86.2 | 1.1 | 2.1 |
| Bucaramanga | 29 | 17.2 | 37.9 | 31.0 | 13.9 | 17.2 | 76.0 | 3.4 | 3.4 |
| Cali | 115 | 7.8 | 36.5 | 40.0 | 15.7 | 1.7 | 80.0 | 11.3 | 7.0 |
| Cali | 197 | 21.8 | 42.6 | 22.3 | 13.2 | 11.2 | 72.6 | 3.1 | 13.1 |
| Cali | 215 | 20.0 | 41.9 | 28.8 | 9.3 | 8.8 | 75.8 | 2.8 | 12.6 |
| Cali | 131 | 18.3 | 44.3 | 27.4 | 10.0 | 3.8 | 69.5 | 8.4 | 18.3 |
| Cartagena | 263 | 26.6 | 36.9 | 24.7 | 11.8 | 6.5 | 73.3 | 4.2 | 16.0 |
| Cucuta | 135 | 21.5 | 41.5 | 19.3 | 17.7 | 7.5 | 80.7 | 5.2 | 6.6 |
| Cucuta | 223 | 19.3 | 57.8 | 19.7 | 3.2 | 4.5 | 87.9 | 5.8 | 1.8 |
| Ibague | 96 | 8.3 | 42.7 | 33.3 | 15.7 | 1.1 | 88.5 | 8.3 | 2.1 |
| Ibague | 178 | 27.5 | 47.7 | 20.2 | 4.6 | 5.2 | 91.0 | 2.2 | 1.6 |
| Ibague | 60 | 23.3 | 40.0 | 26.7 | 10.0 | 5.0 | 85.0 | - | 10.0 |
| Ibague | 79 | 21.5 | 38.0 | 31.6 | 8.9 | 12.6 | 82.3 | 3.8 | 1.3 |
| Medellín | 75 | 8.0 | 48.0 | 29.3 | 14.7 | 6.7 | 93.3 | - | - |
| Total | 2,218 | 20.1 | 43.8 | 25.4 | 10.7 | 7.0 | 79.9 | 4.5 | 8.6 |

Note: See names of projects in table 1.

Table 4. Study by school ages

| Town | Number of families | Ages 6 Attend school | Ages 11 Do not attend school | Ages 12 Attend school | Ages 18 Do not attend school | Total population of school age: Attend school (percentage) | Total population of school age: Do not attend school (percentage) |
|---|---|---|---|---|---|---|---|
| Barranquilla | 26 | 44 | 16 | 16 | 5 | 74.0 | 26.0 |
| Barranquilla | 189 | 252 | 27 | 119 | 9 | 91.1 | 8.9 |
| Bucaramanga | 91 | 112 | 23 | 91 | 53 | 72.8 | 27.2 |
| Bucaramanga | 24 | 31 | 12 | 21 | 17 | 64.2 | 35.8 |
| Bucaramanga | 94 | 142 | 10 | 94 | 44 | 81.4 | 18.6 |
| Bucaramanga | 29 | 46 | 4 | 32 | 8 | 86.7 | 13.3 |
| Cali | 115 | 126 | 64 | 119 | 19 | 74.7 | 25.3 |
| Cali | 197 | 164 | 55 | 97 | 41 | 73.1 | 26.9 |
| Cali | 215 | 245 | 134 | 126 | 89 | 62.4 | 37.6 |
| Cali | 131 | 133 | 80 | 60 | 54 | 59.0 | 41.0 |
| Cartagena | 263 | 397 | 40 | 215 | 47 | 90.1 | 9.9 |
| Cucuta | 135 | 158 | 27 | 112 | 23 | 84.4 | 15.6 |
| Cucuta | 223 | 172 | 92 | 76 | 65 | 61.2 | 38.8 |
| Ibague | 96 | 108 | 73 | 69 | 33 | 62.5 | 37.5 |
| Ibague | 178 | 245 | 22 | 100 | 30 | 86.9 | 13.1 |
| Ibague | 60 | 70 | 4 | 20 | 4 | 91.8 | 8.2 |
| Ibague | 79 | 90 | 1 | 76 | 14 | 91.7 | 8.3 |
| Medellín | 75 | 135 | 30 | 134 | 33 | 81.0 | 19.0 |
| Total | 2,218 | 2,670 | 714 | 1,577 | 588 | 76.5 | 23.5 |

Note: See names of projects in table 1.

Table 5. School attendance

| Town | Project | Number of families | Primary | | Secondary | | University etc. | | Total |
|---|---|---|---|---|---|---|---|---|---|
| | | | Number | Percentage of total | Number | Percentage of total | Number | Percentage of total | |
| Barranquilla | La Magdalena | 24 | 56 | 93.3 | 4 | 6.7 | | | 60 |
| Barranquilla | Olas Palmas | 189 | 359 | 95.2 | 14 | 3.7 | 4 | 1.1 | 377 |
| Bucaramanga | Arenales | 91 | 174 | 85.3 | 21 | 10.3 | 9 | 4.4 | 204 |
| Bucaramanga | Antonia Santos | 24 | 47 | 85.4 | 6 | 10.9 | 2 | 3.7 | 55 |
| Bucaramanga | La Joya | 94 | 199 | 84.3 | 34 | 14.4 | 3 | 1.3 | 236 |
| Bucaramanga | N. Granada | 29 | 68 | 85.0 | 9 | 11.2 | 3 | 3.8 | 80 |
| Cali | Aguablanca | 115 | 222 | 87.4 | 32 | 12.6 | | | 254 |
| Cali | Fortaleza | 197 | 243 | 91.3 | 21 | 7.9 | 2 | 0.8 | 266 |
| Cali | Guabal | 215 | 345 | 91.8 | 26 | 6.9 | 5 | 1.3 | 376 |
| Cali | N. Floresta | 131 | 256 | 93.1 | 15 | 5.4 | 4 | 1.3 | 275 |
| Cartagena | Blas de Lezo | 263 | 489 | 69.8 | 187 | 26.7 | 25 | 3.5 | 701 |
| Cucuta | Guaimaral | 135 | 219 | 79.1 | 52 | 18.8 | 6 | 2.1 | 277 |
| Cucuta | J. Atalaya | 223 | 242 | 87.4 | 16 | 5.8 | 19 | 6.8 | 277 |
| Ibaque | Danubio | 96 | 169 | 93.9 | 11 | 6.1 | | | 180 |
| Ibague | El Jordan | 178 | 318 | 90.9 | 26 | 7.4 | 6 | 1.7 | 350 |
| Ibague | L. de Galarza | 60 | 87 | 93.5 | 2 | 2.2 | 4 | 4.3 | 93 |
| Ibague | Yuldaima | 79 | 135 | 79.9 | 31 | 18.3 | 3 | 1.8 | 169 |
| Medellín | Las Playas | 75 | 217 | 78.9 | 57 | 20.7 | 11 | 0.4 | 275 |
| Total | | 2,218 | 3,845 | 85.3 | 564 | 12.5 | 96 | 2.2 | 4,505 |

Table 6. Use of the dwellings

N = Normal use
A = Abnormal use

| Town | Project | Number of dwellings | Bedroom | | Kitchen | | Living-Dining room | | Bathroom | | Patic | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | N | A | N | A | N | A | N | A | N | A |
| Barranquilla | La Magdalena | 24 | 2 | 22 | 8 | 16 | 8 | 16 | 5 | 19 | | 24 |
| Barranquilla | Las Palmas | 189 | 9 | 180 | 22 | 167 | 43 | 146 | 18 | 171 | 10 | 179 |
| Bucaramanga | Arenales | 91 | 88 | 3 | 70 | 21 | 72 | 19 | 87 | 4 | 87 | 4 |
| Bucaramanga | Antonia Santos | 24 | 21 | 3 | 20 | 4 | 19 | 5 | 21 | 3 | 20 | 4 |
| Bucaramanga | La Joya | 94 | 90 | 4 | 75 | 19 | 82 | 12 | 88 | 6 | 86 | 8 |
| Bucaramanga | N. Granada | 29 | 26 | 3 | 19 | 10 | 21 | 8 | 26 | 3 | 26 | 3 |
| Cali | Aguablanca | 115 | 115 | - | 63 | 52 | 89 | 26 | 78 | 37 | 93 | 22 |
| Cali | Fortaleza | 197 | 168 | 29 | 144 | 53 | 153 | 44 | 108 | 89 | 129 | 68 |
| Cali | Guabal | 215 | 215 | - | 135 | 80 | 159 | 56 | 148 | 67 | 154 | 61 |
| Cali | N. Floresta | 131 | 128 | 3 | 79 | 52 | 82 | 49 | 60 | 71 | 74 | 57 |
| Cartagena | Blas de Lezo | 263 | 288 | 35 | 158 | 105 | 176 | 87 | 194 | 69 | 206 | 57 |
| Cucuta | Guaimaral | 135 | 124 | 11 | 113 | 22 | 98 | 37 | 126 | 9 | 123 | 12 |
| Cucuta | J. Atalaya | 223 | 198 | 25 | 129 | 94 | 135 | 88 | 161 | 62 | 197 | 26 |
| Ibague | Danubio | 96 | 5 | 91 | 18 | 78 | 28 | 68 | 6 | 90 | 3 | 93 |
| Ibague | El Jordan | 178 | 37 | 141 | 38 | 140 | 40 | 138 | 39 | 139 | 38 | 140 |
| Ibague | L. de Galarza | 60 | 2 | 58 | 2 | 58 | 2 | 58 | 2 | 58 | 2 | 58 |
| Ibague | Yuldaima | 79 | 26 | 53 | 20 | 59 | 17 | 62 | 29 | 50 | 29 | 50 |
| Medellín | Las Playas | 75 | 5 | 70 | 8 | 67 | 27 | 48 | 10 | 65 | 10 | 65 |
| | Total | 2,218 | 1,487 | 731 | 1,121 | 1,097 | 1,251 | 967 | 1,206 | 1,012 | 1,287 | 931 |
| | Percentage of total number of dwellings | | 67.0 | 33.0 | 50.5 | 49.5 | 56.4 | 43.6 | 54.4 | 45.6 | 58.0 | 42.0 |

Table 7. Community services most used

| Town | Number of opinions | None | Church | School | Public health | Co-operative | Community centre | Other |
|---|---|---|---|---|---|---|---|---|
| Barranquilla | 27 | 10 | 11 | - | 4 | - | 1 | 1 |
| Barranquilla | 134 | 54 | 69 | 8 | - | - | - | 3 |
| Bucaramanga | 105 | 56 | 10 | 12 | 27 | - | - | - |
| Bucaramanga | 15 | - | 6 | 5 | - | - | 4 | - |
| Bucaramanga | 140 | 20 | 49 | 49 | 20 | - | 2 | - |
| Bucaramanga | 35 | 15 | 9 | 7 | - | - | 4 | - |
| Cali | 112 | 43 | - | 5 | 27 | 9 | 9 | 19 |
| Cali | 222 | 52 | 6 | - | 116 | 34 | 7 | 7 |
| Cali | 233 | 32 | 23 | 6 | 59 | 27 | - | 86 |
| Cali | 109 | 18 | 20 | 42 | 2 | 1 | 26 | - |
| Cartagena | 257 | - | 179 | 53 | 9 | - | 10 | 6 |
| Cucuta | 188 | 64 | 35 | 20 | 16 | 16 | 6 | 31 |
| Cucuta | 239 | - | 73 | 123 | - | - | - | 43 |
| Ibague | 175 | 6 | 15 | 83 | 57 | - | - | 14 |
| Ibague | 165 | 21 | - | 118 | - | 6 | 18 | 2 |
| Ibague | 92 | 4 | - | 47 | 37 | - | 3 | 1 |
| Ibague | 89 | 21 | - | 32 | 5 | - | - | 31 |
| Medellín | 75 | 75 | - | - | - | - | - | - |
| Total | 2,412 | 491 | 505 | 610 | 379 | 93 | 90 | 244 |
| Percentage | 100 | 20 | 21 | 25 | 16 | 4 | 4 | 10 |

Note: See names of projects in table 1.

Table 8. Condition of the houses

| Town | Number of dwellings | Unchanged | | Improved | | Extended | |
|---|---|---|---|---|---|---|---|
| | | Number | Percentage | Number | Percentage | Number | Percentage |
| Barranquilla | 24 | 5 | 20.9 | 8 | 33.3 | 11 | 45.8 |
| Barranquilla | 189 | 78 | 41.3 | 98 | 51.9 | 13 | 6.8 |
| Bucaramanga | 91 | 8 | 8.8 | 57 | 62.6 | 26 | 28.6 |
| Bucaramanga | 24 | 3 | 12.5 | 12 | 50.0 | 9 | 37.5 |
| Bucaramanga | 94 | 15 | 16.1 | 53 | 56.4 | 26 | 27.5 |
| Bucaramanga | 29 | 7 | 24.0 | 12 | 41.4 | 10 | 34.6 |
| Cali | 115 | 12 | 10.5 | 38 | 33.0 | 65 | 56.5 |
| Cali | 197 | 32 | 16.2 | 123 | 62.5 | 42 | 21.3 |
| Cali | 215 | 47 | 21.9 | 111 | 51.6 | 57 | 26.5 |
| Cali | 131 | 16 | 12.2 | 66 | 50.4 | 49 | 37.4 |
| Cartagena | 263 | 27 | 10.3 | 63 | 24.0 | 173 | 65.7 |
| Cucuta | 135 | 21 | 15.5 | 27 | 20.0 | 87 | 64.5 |
| Cucuta | 223 | 47 | 21.1 | 111 | 49.8 | 65 | 29.1 |
| Ibague | 96 | 38 | 39.6 | 41 | 42.7 | 17 | 17.7 |
| Ibague | 178 | 89 | 50.0 | 64 | 35.9 | 25 | 14.1 |
| Ibague | 60 | 27 | 45.0 | 23 | 38.3 | 10 | 16.7 |
| Ibague | 79 | 22 | 27.8 | 34 | 43.1 | 23 | 29.1 |
| Medellín | 75 | 22 | 29.2 | 13 | 17.3 | 40 | 53.5 |
| Total | 2,218 | 516 | 23.3 | 954 | 43.0 | 748 | 33.7 |

Note: See names of projects in table 1.

EL SALVADOR

SANTA LUCIA COLONY MUTUAL-AID PROJECT

By the Instituto de Vivienda Urbana de El Salvador

CONTENTS



Annexes

The Urban Housing Institute and the Inter-American Development Bank, in accordance with the terms of Loan No. 27 TS ES, specified that 50 per cent of the units built under that loan were to be constructed by the self-help method. Two thousand five hundred units were to be built over a two-year period (1964-1965).

This study reports on the experience obtained during the first stage of the Santa Lucia Colony mutual-aid project, when 200 units were built, and from the subsequent construction of 260 additional units.

## THE URBAN HOUSING INSTITUTE'S INTERPRETATION OF SELF-HELP

The purpose of the programme was to promote and carry out the construction of hygienic, comfortable and economic permanent dwellings for families that were in need of housing and whose low incomes made it impossible for them to acquire homes by other means. The outstanding characteristic of the programme was the collective action of the participants, who provided the necessary labour in building their houses.

The characteristics of the first two projects were established in advance. The zone, design, budget and participation of families and of the Institute were specified.

Thus, the Self-Help Section of the Institute took part in publicizing the project, selecting participants or future allottees, programming work to be done with the families, and directing the execution of the work itself, in both the building and social aspects.

## SANTA LUCIA COLONY PROJECT - 200 AND 260 UNITS

### Location

Santa Lucia Colony is located approximately 8 kilometres east of the centre of San Salvador, on the south side of the Boulevard del Ejército, near Ilopango International Airport.

This location was selected because it is near several factories and because of the transportation facilities provided by the highway that connects it with the capital city and which can easily be improved should the need arise. The Institute also happened to own property in that sector.

This project was publicized among the labour population of the factories located in the vicinity of the Colony, but families residing in or working in other zones of the city who showed interest in this way of solving their housing problem were also accepted as candidates.

The adaptation of our building system to non-skilled labour presented serious problems, and at the beginning the families' labour contribution only amounted to 4 per cent of the value of the house, thus making it necessary for them to provide cash as well. In other words, their work was to be assessed at $200 and they were to complete their 10 per cent contribution with a cash payment of $350. A term of six months was granted for payment of this amount, in monthly instalments of $60.

The programme was calculated for a population with family incomes between $120 and $320, but the families that were interested fell into an income group of $120 to $250, and they could not make the payments even under the easy terms specified. This made it difficult to recruit candidates, and less than a hundred were finally gathered.

The project stood thus:

| | |
|---|---|
| Cost of the housing unit (total) | $5,000 |
| Developed site | 1,500 |
| Construction materials | 2,500 |
| Labour | 1,000 |

Labour was divided between that provided by the family and that provided by the institution.

Family contribution:

| | | |
|---|---|---|
| Labour | $200 | |
| Cash | 350 | (in monthly instalments of $60) |
| Total contribution | $550 | |

In view of these findings, the physical participation of the families was reviewed, in order to enable them to contribute $514 worth of labour, although this meant taking the risk involved in using inexperienced workers on jobs that called for skilled labour.

The project then stood thus:

## Self-help programme for building type D-2Z units

| | |
|---|---|
| Area of lot . . . . . | 8.50 x 12 - 102 $m^2$ |
| Unit built-up area. . . . . | 5.84 x 9.08 - 53.03 $m^2$ |
| Cost of building each unit. . . . . | $3,751.30 |
| Developed lot . . . . . | 1,500.00 |
| Unit . . . . . | $5,251.30 |
| Allottee's labour contribution. . . . . | 514.33 |
| Approximate allotment value of unit . . . . . | $4,736.97 |
| Interest. . . . . | 6 per cent |
| Number of monthly instalments to be paid. . . . . | 240 |
| Approximate amount of instalment. . . . . | $33.95 |
| Total labour, self-help and contracted. . . . . | $1,002.33 |

## Construction jobs in which the family groups in the mutual-aid programme, unit type D-2Z, took part, and their values

| | |
|---|---|
| Layout . . . . . | $ 10.00 |
| Terracing . . . . . | 16.00 |
| Concrete slab . . . . . | 104.87 |
| Roofs (structure and cover) . . . . . | 202.22 |
| Doors and fittings. . . . . | 27.84 |
| Closets . . . . . | 23.10 |
| Installation of potable water supply. . . . . | 6.00 |
| Sanitary fittings . . . . . | 30.00 |
| Electrical installations. . . . . | 59.50 |
| Painting and varnishing . . . . . | 10.50 |
| Cleaning. . . . . | 11.50 |
| Nomenclature. . . . . | 0.80 |
| Green areas . . . . . | 12.00 |
| Allottee's labour contribution. . . . . | $514.33 |

General interest in participation grew with the increase in the family labour contribution. But the project was not initiated until a year later, on 4 April 1964. It began with the construction of 66 units, divided into three groups as follows:

| | |
|---|---|
| Group No. 1 | 28 families |
| Group No. 2 | 20 families |
| Group No. 3 | 18 families |

The work schedule established was:

Saturdays: from 2 to 6 p.m.

Sundays: from 7 a.m. to 12 noon

It was estimated that, with nine hours of work per week, the construction phase would last from six to eight months.

After the second week, the first participating families extended the Sunday work schedule, first to 2 p.m. and later to 4 or 6 p.m. They also proved to be quite able and enthusiastic.

After a month, during which the performance and ability of workers who were unskilled in building were observed, a second stage of 40 units was started, on 1 May of the same year.

The 40 families were later divided into two groups, No. 4 and No. 5, of 20 families each, for control purposes.

On 31 May of that year, 94 more families began work, thus completing the 200-unit project originally planned. These 94 families were divided into four groups, thus:

| | |
|---|---|
| Group No. 6 | 20 families |
| Group No. 7 | 24 families |
| Group No. 8 | 20 families |
| Group No. 9 | 30 families |

## Performance

The time spent in building generally ranged from 14 to 16 hours a week, and work was also done on holidays such as 1 May, 4 August, 15 September, 12 October and 5 November.

Time worked by each group

| Group | Man-hours |
|---|---|
| 1 | 13,412 |
| 2 | 9,920 |
| 3 | 8,316 |
| 4 | 9,140 |
| 5 | 9,100 |
| 6 | 9,140 |
| 7 | 9,860 |
| 8 | 10,872 |
| 9 | 11,130 |
| 10 | 14,336 |
| 11 | 14,728 |
| 12 | 12,432 |
| 13 | 9,864 |
| 14 | 10,162 |
| 15 | 9,768 |
| 16 | 7,260 |
| 17 | 7,020 |
| 18 | 7,060 |
| 19 | 9,800 |
| 20 | 5,740 |
| **Total** | 330,522 |

The unskilled participants were observed as they performed different tasks and were assigned to the jobs in which they proved to have the most ability. Pouring concrete, especially, was done by unskilled workers.

The women, even though not considered qualified, worked very well. They were assigned to make beams used in the roofs, a job that was rarely done by men. The men did mix the concrete and level the beams, but in most groups, the work was done entirely by women. In several groups, female participation consisted of cutting iron and making 1/4" iron fasteners for the structure; in most cases they were assigned to painting, and patching and painting of windows. When the male workers needed help in covering roofs and plastering, the women also lent a hand. In four or five groups, a woman was responsible for managing the cement mixer, and serving the concrete once it was made.

It is considered that at least two or three members per family helped in the work, bringing the labour force to 1,380 persons. Six hundred persons worked on the 200-unit project and 780 family members worked on the 260-unit project, not counting helpers under 15.

Paid labour

It was necessary to contract skilled labourers, paying part of the cost, for several jobs that required specialized skills or that would have unduly delayed the rest of the work. These expenses were met with the funds established by the individual groups.

The disciplinary regulations established by the institution were respected, as were the penalties established by the groups themselves.

Each work group was organized with a board of directors made up of the following officers:

Co-ordinator
Treasurer
Secretary
Auditor
Vocal

The duties of these members are stated in the internal regulations for the groups (see annex I).

## Attendance

This is regulated by the Institute, allowing 10 per cent of the total working hours (figured at the rate of nine hours a week for eight months), or three consecutive weekends, of unexcused absences. In addition to this control, the groups established cash penalties at the rate of 1 or 2 colones per hour. The most accepted fine was 2 colones on Saturdays and 4 or 5 colones on Sundays. The institution requires at least one member of the family to work. Educational work is carried out in order to persuade each family to take as many helpers as possible to the construction site. Some groups made it obligatory for each family to take a helper or to pay a certain amount in substitution for such a helper. These situations were regulated by Social Services, according to family conditions.

## Withdrawal or expulsion

The requirements and disciplinary regulations were made clear to the participants from the time they showed interest in the programme, in order to avoid misunderstandings, especially in cases of withdrawals or expulsions.

A participant who withdrew received no reimbursement; his work was credited to the group. The person who participated in his place had to make up the remainder of the contribution through labour or cash payment of an equivalent amount. The labour contribution was determined by the Institute in accordance with what each participant had been contributing, but the money was managed and controlled by the group.

## Drop-outs

Desertions in the 200-unit project amounted to 10 per cent, and in the 260-unit project, to 18.5 per cent, making a total of 14.8 per cent for the entire project. This was quite encouraging, as it provided concrete proof of the acceptance of the programme, especially if we analyse the reasons participants had

for deserting, and the time at which they did so. Most of the desertions occurred during the first week of work, and were due to health problems and the working schedule. Very few workers deserted because of lack of interest.

As regards the second project, the desertions occurred after the earthquake of 3 May 1965, which shook San Salvador, and as a result of which there were rumours of great danger in the working area. Only one person was expelled during the entire project, and that was on account of absenteeism. The cases of undisciplinary conduct that might have merited expulsion were handled in such a way as not to deprive the family group (wife and children) of the dwelling, while the person who caused the problem would no longer be entitled to it. This situation arose in less than 3 per cent of the families.

## Group finances

The building work took longer than had originally been planned, and since the groups had increased, it was necessary for the families to help by paying for a certain amount of labour. For this purpose, each group created a fund, composed and administered entirely by its members but under the supervision of Social Services. The fund was made up of quotas assigned each participant by common agreement. These amounts varied from group to group, but were set between 2 and 10 colones. Whenever a quota higher than 5 colones was set, Social Services intervened by cutting it or replacing it with extra work, since the main purpose of the project was to increase the physical contributions of the families and reduce cash payments to a minimum. In many cases the groups were able to take care of expenses with the funds accumulated through individual and collective contributions. In cases of families with pressing financial problems, outside help was sought from community agencies and other organizations.

In summary, the capital of each group was made up of the quotas from each family; the income from fines for absenteeism; the profit from lucrative activities such as raffles, dances and sweet sales; and the financial contributions of persons substituting for those who withdrew from the programme.

## Willingness to work

The participants' spirit of initiative in the execution of the work entrusted to them was evident. Many of them proposed and applied some very practical working methods, with excellent results. Others invented tools that made their work easier and many even made the tools needed by the groups, such as iron cutters, clamps etc.

Most of the participants were quite active, although some were less diligent. The families responded to the programme by taking a good number of members to help, and many participants worked more than their fellow group members.

## Aspirations for improved housing

The housing plans did not include brick floors, fences or gates. The participants requested these improvements in the design, but it was not possible to consider them in the first project. In the second, the Institute was able to provide the materials for building fences, with the families contributing the labour. For the brick floors, the Office provided compensation equivalent to the labour involved in dubbing out the floors. The groups that wanted brick provided the materials and labour necessary. In the second project, five groups bricked up their houses, making a total of 120 units, which amounted to 47 per cent of the specific project and 23.5 per cent of the whole project. Also, this percentage was increased by the families in both projects who bricked up their units individually.

The walls of the houses had a rough finish, but were plastered after allocation. This was also the case with the dubbing out of roofs and inside walls.

## Human problems

During the progress of the project, several irregular situations occurred as a result of various family factors.

There were problems with relations among participants. This was a result of the fatigue caused by the work, the lack of understanding by some participants with regard to the physical limitations of their fellow group members, or of the rough manners of others. Many of these problems disappeared as construction advanced, most at the conclusion of the work, and very few persisted.

Other irregular situations were caused by workers being laid off their jobs, marriage problems, limited income, and poor health; there were some conduct problems. Social service caseworkers were assigned to all these problems. In general, a spirit of co-operation was awakened that became evident during the course of the construction, in such cases as the following:

In one of the groups in the first project, one of the participants fell seriously ill halfway through the building phase. The family could not pay for substitutes, nor did it have any relatives in San Salvador. The group finished its work and the family received the house along with the rest.

This was proof of the feeling of solidarity developed in the group and shows how important self-help projects can be in arousing community feelings when a group of individuals sharing similar tasks and problems undertakes a particular enterprise.

In the 260-unit project, likewise, one of the participants had a car accident on the way to the building site. The group took over his obligations and his family received its home.

The friendships observed among most of the participants were satisfactory, and have improved after occupancy. However, there have always been some neighbourhood problems, especially because, after the families received their dwellings, no attention was given to helping them adjust to their new surroundings.

## INTEGRATION INTO THE SOCIAL LIFE OF THE COMMUNITY

In the 200-unit project, a central board of directors was organized, with a representative from the new participating groups, in order to include them in the community activities being carried out by the first residents of the Colony. Their co-operation and the dynamism they brought to the work were helpful, as they became interested in the progress of the Colony. They proved they could work for themselves, with the co-operation of neighbours. On their own initiative, they installed lighting in some lanes that were in need of it, providing the materials and labour themselves and collectively paying for the power.

The community school-building committee conducted a "Colony Crusade" to raise funds for finishing and furnishing the building. Everyone co-operated, even the groups that were still at the construction stage.

This project has fulfilled the double purpose - demonstration and education - of self-help programmes, and with the work to be done in the Colony in the future, it will be possible to prove its social benefit as regards the instilling of community spirit.

## STATISTICS

The following statistics are presented for future analyses in learning about the client population for this type of programme, so that it may be chosen to satisfy certain conditions that are essential if the largest portion of the population with acute housing problems is to be reached.

Table 1. Number and percentage of members of the 460 (200 + 260) families qualified for construction work

| Age of qualified members | 200 families | Percentage | 260 families | Percentage | Total families | Percentage |
|---|---|---|---|---|---|---|
| 15 - 21 | 52 | 20.88 | 77 | 23.47 | 129 | 22.36 |
| 22 - 29 | 74 | 29.72 | 107 | 32.62 | 181 | 31.37 |
| 30 - 37 | 157 | 22.89 | 70 | 21.34 | 127 | 22.01 |
| 38 - 45 | 42 | 16.87 | 37 | 11.28 | 79 | 13.69 |
| 46 - 53 | 12 | 4.82 | 22 | 6.71 | 34 | 5.89 |
| 54 + | 12 | 4.82 | 15 | 4.57 | 27 | 4.68 |
| | 249 | 100 | 328 | 100 | 577 | 100 |

Table 2. Ratio of male population to population qualified for construction work

| Number of families | Total population | Total male population | 3/2 x 100 (percentage) | Population qualified for construction work | 5/3 x 100 (percentage) |
|---|---|---|---|---|---|
| ( 1 ) | ( 2 ) | ( 3 ) | ( 4 ) | ( 5 ) | ( 6 ) |
| 200 | 1,013 | 488 | 49 | 249 | 51 |
| 260 | 1,296 | 632 | 49 | 328 | 52 |
| 460 | 2,309 | 1,120 | 48.50 | 577 | 51.51 |

Table 3. Percentages of occupations related to construction, in relation to the 460 members responsible for building

| Occupation | Number of persons | Percentage of total population (2,309) | Percentage of male population (1,120) | Percentage of qualified population (577) |
|---|---|---|---|---|
| Mason | 13 | 0.56 | 1.16 | 2.25 |
| Carpenter | 26 | 1.13 | 2.32 | 4.51 |
| Plumber | 3 | 0.01 | 0.27 | 0.52 |
| Electrician | 11 | 0.48 | 0.98 | 1.91 |
| Assembler | 5 | 0.22 | 0.45 | 0.87 |
| Mechanic | 37 | 1.60 | 3.30 | 6.41 |
| Painter | 10 | 0.43 | 0.89 | 1.73 |
| Mason's aide | 5 | 0.22 | 0.45 | 0.87 |
| Master builder | 2 | 0.09 | 0.18 | 0.35 |
| | 112 | 5 | 10 | 19.42 |

Table 4. Trades of applicants

| Trade | 200 families | Percentage | 260 families | Percentage | Total families | Percentage |
|---|---|---|---|---|---|---|
| Occupations related to construction | 58 | 29 | 40 | 15.38 | 98 | 21.30 |
| Manual | 52 | 26 | 74 | 28.46 | 126 | 27.39 |
| Other | 90 | 45 | 146 | 55.75 | 236 | 51.30 |
| | 200 | 100 | 260 | 99.59 | 460 | 100 |

Among the participant population, the cases of 95 families who did not have a member qualified for construction work were taken care of. Seventy-four of these families were represented in the construction work by friends or relations and only 21 families without a representative qualified for construction work were accepted. The families with substitutes or representatives amounted to 16.07 per cent and the families with a male representative amounted to 4.6 per cent.

Table 5. Occupations of substitutes or representatives in construction work

| Occupation | 200 families | 260 families | Total |
|---|---|---|---|
| Related to construction | | | |
| Carpenter | 3 | 1 | 4 |
| Mechanic | 4 | 3 | 7 |
| Painter | 2 | 1 | 3 |
| Manual | | | |
| Unskilled labourer | 3 | 5 | 8 |
| Skilled labourer | 2 | - | 2 |
| Tailor | 2 | 1 | 3 |
| Motorist | 2 | 5 | 7 |
| Dry-cleaning worker | - | 1 | 1 |
| Shoemaker | - | 4 | 4 |
| Typographer | - | 1 | 1 |
| Other | | | |
| Orderly | 2 | - | 2 |
| Employee | 3 | 13 | 16 |
| Student | 2 | 8 | 10 |
| Bus-fare collector | 2 | - | 2 |
| Accountant | - | 3 | 3 |
| Professor | - | 1 | 1 |
| Total | 27 | 47 | 74 |
| Summary | | | |
| Occupations related to construction | | | 14 |
| Manual occupations | | | 26 |
| Other occupations | | | 34 |

Table 6. Schooling of applicants

| Level of education | Number | Percentage |
|---|---|---|
| Primary | 259 | 56.30 |
| Secondary | 51 | 11.09 |
| Teacher's training courses | 6 | 1.30 |
| Accounting courses | 17 | 3.70 |
| Business and financial courses | 60 | 13.04 |
| University | 11 | 0.22 |
| Illiterate | 14 | 4.78 |
| Schooling unknown | 44 | 9.57 |
| Total | 460 | 100 |

Table 7. Schooling of total population of the 460 families, from the age of 7

| Level of education | Number | Percentage |
|---|---|---|
| Primary | 784 | 46.2 |
| Secondary | 122 | 7.5 |
| Teacher's training courses | 14 | 0.82 |
| Accounting courses | 30 | 1.76 |
| Nursing courses | 3 | 0.17 |
| Business and financial courses | 120 | 7.00 |
| University | 2 | 0.11 |
| Illiterate | 42 | 2.4 |
| Schooling unknown | 580 | 34.1 |
| Total | 1,697 | 100 |

Table 8. Distribution of family income

| Income level (colones) | Total income (colones) | Number of families | Percentage of families | Accumulated percentage of families |
|---|---|---|---|---|
| 90 - 109 | 290 | 3 | 0.65 | 0.65 |
| 110 - 129 | 1,217 | 10 | 2.17 | 2.82 |
| 130 - 149 | 2,669 | 19 | 4.13 | 6.95 |
| 150 - 169 | 8,228 | 56 | 12.17 | 19.12 |
| 170 - 189 | 7,170 | 40 | 8.70 | 27.82 |
| 190 - 209 | 10,096 | 51 | 11.09 | 38.91 |
| 210 - 229 | 8,911 | 40 | 8.70 | 47.61 |
| 230 - 249 | 10,444 | 44 | 9.56 | 57.17 |
| 250 - 269 | 12,507 | 52 | 11.30 | 68.47 |
| 270 - 289 | 7,769 | 28 | 6.09 | 74.56 |
| 290 - 309 | 16,410 | 55 | 11.96 | 86.52 |
| 310 - 329 | 10,503 | 34 | 7.39 | 93.91 |
| 330 - 349 | 5,045 | 15 | 3.26 | 97.17 |
| 350 - 369 | 4,600 | 13 | 2.83 | 100.00 |
| Total | 105,669 | 460 | 100 | |

| | |
|---|---|
| Maximum income | 360.00 colones |
| Average income | 229.71 colones |
| Minimum income | 90.00 colones |

Table 9. Rentals paid for former housing

| Rental (colones) | 200 families | Percentage | 260 families | Percentage | Total | Percentage |
|---|---|---|---|---|---|---|
| 5 - 10 | 2 | 1.00 | 4 | 1.54 | 6 | 1.33 |
| 11 - 15 | 10 | 5.00 | 17 | 6.50 | 17 | 3.78 |
| 16 - 20 | 34 | 17.00 | 41 | 15.77 | 75 | 16.67 |
| 21 - 25 | 33 | 16.50 | 50 | 19.23 | 83 | 18.44 |
| 26 - 30 | 17 | 8.50 | 41 | 15.77 | 58 | 12.89 |
| 31 - 35 | 24 | 12.50 | 22 | 8.46 | 46 | 10.22 |
| 36 - 40 | 18 | 9.00 | 17 | 6.50 | 35 | 7.78 |
| 41 - 45 | 5 | 2.50 | 9 | 3.46 | 14 | 3.11 |
| 46 - 50 | 13 | 6.50 | 10 | 3.85 | 23 | 5.11 |
| 51 - 55 | 4 | 2.00 | 6 | 3.31 | 10 | 2.22 |
| 56 - 60 | 8 | 4.00 | 10 | 3.85 | 18 | 4.00 |
| 61 - 65 | 2 | 1.00 | 4 | 1.54 | 6 | 1.33 |
| 66 - 70 | 6 | 1.15 | 3 | 3.00 | 9 | 2.00 |
| 71 - 75 | 4 | 1.54 | 4 | 2.00 | 8 | 1.78 |
| 76 - 80 | 2 | 1.00 | 5 | 1.92 | 7 | 1.56 |
| 81 - 85 | - | - | - | - | - | - |
| 86 - 90 | 1 | 0.38 | 1 | 0.50 | 2 | 0.44 |
| 91 - 95 | - | - | - | - | - | - |
| 96 - 100 | 4 | 2.00 | 1 | 0.38 | 5 | 1.11 |
| 101 + | 2 | 1.00 | 5 | 1.92 | 7 | 1.56 |
| Were not paying rent | 11 | 5.50 | 10 | 3.85 | 21 | 4.67 |
| Total | 200 | 100 | 260 | 100 | 450 | 100 |

The minimum rental was 5 colones per month.
The maximum rental was 180 colones per month.
The most frequent rental was 25 colones per month; this is about 10-12 per cent of income.

Observations on rentals. Only one family among the 460 was paying 180 colones; 4 families were paying 125 colones and 2 were paying 120 colones. These were considered in the frequency of 101 colones or more, which shows a total of 7.

Table 10. Type of housing formerly occupied by participating families

| Type of housing | 200 families | Percentage | 260 families | Percentage | Total | Percentage |
|---|---|---|---|---|---|---|
| Tenement | 150 | 75.00 | 139 | 53.46 | 289 | 62.83 |
| Shared house | 12 | 6.00 | 26 | 10.00 | 38 | 8.26 |
| Individual house | 5 | 2.50 | 34 | 13.08 | 39 | 8.48 |
| Apartment | 16 | 8.00 | 45 | 17.31 | 61 | 13.26 |
| IVU multifamily apartment | 8 | 4.00 | 8 | 3.08 | 16 | 3.48 |
| Other (champas, alleys, etc.) | 9 | 4.50 | 8 | 3.08 | 17 | 3.70 |
| Total | 200 | 100 | 260 | 100 | 460 | 100 |

Table 11. Number of bedrooms needed in housing of participating families

| Number of bedrooms | 200 families | Percentage | 260 families | Percentage | Total | Percentage |
|---|---|---|---|---|---|---|
| 1 | 3 | 1.50 | 26 | 10.00 | 29 | 6.30 |
| 2 | 52 | 26.00 | 72 | 27.69 | 124 | 26.96 |
| 3 | 120 | 60.00 | 140 | 53.85 | 260 | 56.52 |
| 4 | 24 | 12.00 | 20 | 7.59 | 44 | 9.57 |
| 5 | 1 | 0.50 | 1 | 0.38 | 2 | 0.43 |
| 6 | 0 | - | 1 | 0.38 | 1 | 0.22 |
| Total | 200 | 100 | 260 | 100 | 460 | 100 |

## SPECIFICATIONS

In carrying out the physical works, the first task was to select the building jobs in which the participating families could co-operate and the ones in which family labour was out of the question.

The following factors were taken into account in this selection:

(a) The basic contribution of 10 per cent of the total cost of the unit;

(b) Skilled labour available in the family groups;

(c) Need to contract labour for certain jobs in order to avoid over-all delay of the construction.

The building of roofs presented the most problems for the participating families, because of the design itself, because this job required specialized labour, and because it was done during the rainy season. If we add to this that the equipment, such as cement mixers and vibrators, was not in good working condition, it may be seen why roofs account for a high percentage of the total construction time.

The 460 units reported on here were built in two stages. Two hundred units were built during the first stage, and during the second, initiated immediately upon completion of the first, the total of 460 units were completed.

These units were built on land that had already been completely developed, except for the sidewalks, which were built afterwards.

A special factor that must be noted is that on 3 May 1965, during the building of the final 260 units, a severe earthquake caused losses and delay in the construction. This, of course, was also reflected in the slightly higher cost of the last houses, built after the earthquake.

The following tables provide interesting information on costs and the different activities carried out by the participating families in the construction of their dwellings.

Table 12. Individual participant contributions to the construction of 200 one-family dwellings in the Santa Lucia urban centre

| Job | Kind of work done | Unit price | Value (colones) | Total |
|---|---|---|---|---|
| Layout | 1 layout for dwelling | 10.00 | 10.00 | 10.00 |
| Terracing | 8.00 $m^3$ terracing | 1.00 | 8.80 | 8.80 |
| Floors | 28.80 m foundation bedplate mould | 0.20 | 5.76 | |
| | 46.06 m iron foundation bedplate | 0.30 | 13.81 | |
| | 49.67 $m^2$ floor foundation framework | 0.40 | 19.86 | |
| | 3.00 $m^3$ concrete foundation bedplate | 5.00 | 15.00 | |
| | 7.20 $m^3$ concrete floors | 5.00 | 36.00 | |
| | 1 each unmoulding foundation bedplate | 2.00 | 2.00 | 92.43 |
| Concrete | 12.00 m vertical ribs | 0.30 | 3.60 | |
| | 55.80 m crown beam | 0.30 | 16.74 | |
| | 6.00 m rebate moulding | 0.75 | 4.50 | |
| | 3.41 $m^3$ concrete crown beam | 5.00 | 17.05 | |
| | 1 each unmoulding crown beam | 6.00 | 6.00 | 47.89 |

Table 12 (continued)

| Job | Kind of work done | Unit price | Value (colones) | Total |
|---|---|---|---|---|
| Roofs | 222.00 m making beams | 0.10 | 22.20 | |
| | 222.00 m placing beams | 0.15 | 33.30 | |
| | 36.00 m piling | 0.40 | 14.40 | |
| | 57.50 $m^2$ roof framework | 0.50 | 28.75 | |
| | 9.30 m border beam | 0.30 | 2.79 | |
| | 32.50 m roof scraping | 0.15 | 4.87 | |
| | 9.35 m facia mould | 0.30 | 2.80 | |
| | 54 each fleches for roof | 0.10 | 5.40 | |
| | 32.00 m quartered wood for roof | 0.15 | 4.80 | |
| | 4.80 $m^3$ roof concrete | 10.00 | 48.00 | |
| | 59.68 $m^2$ roof plaster | 0.40 | 23.87 | 191.18 |
| Doors | 2 each panelled doors | 3.00 | 6.00 | |
| | 2 each doors with latch | 2.15 | 4.30 | |
| | 4 each double-throat rebates | 1.75 | 7.00 | |
| | 4 each single-throat rebates | 1.50 | 6.00 | |
| | 300 each rebate pins | 0.02 | 6.00 | 29.30 |
| Windows | 7 each louvred windows | 1.33 | 9.31 | 9.31 |
| Sanitary fittings | 1 each toilet placed | 5.00 | 5.00 | |
| | 1 each lavatory placed | 5.00 | 5.00 | |
| | 1 each sanitary furnishing | 35.00 | 35.00 | |
| | 1 each connexion for sanitary furnishing | 2.50 | 2.50 | 47.50 |
| Electrical installations | 13 each units installed | 2.00 | 26.00 | 26.00 |
| Potable water | 1 each installation | 12.50 | 12.50 | 12.50 |
| Cleaning | 1 each house cleaning | 6.00 | 6.00 | 6.00 |
| Temporary installation | Per participant | 0.42 | 0.42 | 0.42 |
| | Total | | | 481.33 |

Table 13. Comparative table of 20 groups of families participating in the programme for building 460 dwellings under the mutual-aid system

(colones)

| Group No. | Number of families | Starting date | Finishing date | Building time | Cost of materials | Cost of labour | Cost of site | Total cost | Individual family contribution | Percentage of labour cost | Percentage of total cost | Allocation value | Monthly instalment |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 28 | 4/IV/64 | 13/XII/64 | 8m.9d. | 2,365.55 | 1,258.53 | 1,274.06 | 4,898.14 | 481.33 | 38.20 | 9.80 | 5,000.00 | 31.95 |
| 2 | 20 | 4/IV/64 | 13/XII/64 | 8m.9d. | 2,409.54 | 1,266.10 | 1,273.04 | 4,948.53 | 481.33 | 38.00 | 9.70 | 5,000.00 | 32.30 |
| 3 | 18 | 4/IV/64 | 13/XII/64 | 8m.9d. | 2,398.57 | 1,266.83 | 1,273.22 | 4,938.28 | 481.33 | 38.00 | 9.70 | 5,000.00 | 32.25 |
| 4 | 20 | 20/IV/64 | 13/XII/64 | 7m.23d. | 2,416.80 | 1,261.51 | 1,272.05 | 4,949.55 | 481.33 | 38.00 | 9.70 | 5,000.00 | 32.30 |
| 5 | 20 | 20/IV/64 | 13/XII/64 | 7m.23d. | 2,358.96 | 1,253.22 | 1,272.05 | 4,883.92 | 481.33 | 38.40 | 9.85 | 5,000.00 | 31.85 |
| 6 | 20 | 6/VI/64 | 31/I/65 | 7m.25d. | 2,394.35 | 1,277.99 | 1,272.66 | 4,945.00 | 481.33 | 37.70 | 9.70 | 5,000.00 | 32.25 |
| 7 | 20 | 31/V/64 | 31/I/65 | 8 mos. | 2,417.96 | 1,313.40 | 1,268.99 | 5,000.35 | 481.33 | 36.60 | 9.60 | 5,000.00 | 32.65 |
| 8 | 24 | 6/VI/64 | 17/I/65 | 7m.25d. | 2,338.42 | 1,293.68 | 1,277.14 | 4,909.24 | 481.33 | 31.00 | 9.80 | 5,000.00 | 32.05 |
| 9 | 30 | 31/V/64 | 13/XII/64 | 6m.10d. | 2,313.15 | 1,228.36 | 1,274.42 | 4,815.93 | 481.33 | 39.18 | 10.00 | 5,000.00 | 31.35 |
| 10 | 28 | 6/XII/64 | 22/IX/65 | 9m.19d. | 2,606.05 | 1,325.21 | 1,288.63 | 5,219.89 | 514.82 | 38.80 | 9.90 | 5,228.40 | 33.77 |
| 11 | 28 | 6/XII/64 | 22/IX/65 | 9m.19d. | 2,654.84 | 1,340.43 | 1,291.17 | 5,286.44 | 530.62 | 39.60 | 10.00 | 5,294.96 | 34.13 |
| 12 | 24 | 6/XII/64 | 22/IX/65 | 9m.19d. | 2,619.70 | 1,354.42 | 1,292.13 | 5,266.25 | 535.97 | 39.60 | 10.20 | 5,273.43 | 33.94 |
| 13 | 24 | 24/I/65 | 6/XI/65 | 9m.13d. | 2,467.63 | 1,469.10 | 1,289.90 | 5,226.63 | 536.95 | 36.50 | 10.30 | 5,233.77 | 33.66 |
| 14 | 24 | 24/I/65 | 6/XI/65 | 9m.13d. | 2,373.33 | 1,513.77 | 1,290.21 | 5,177.31 | 537.10 | 35.50 | 10.40 | 5,184.47 | 33.30 |
| 15 | 24 | 31/I/65 | 6/XI/65 | 9m.6d. | 2,484.97 | 1,449.36 | 1,289.46 | 5,223.79 | 530.63 | 36.60 | 10.20 | 5,230.93 | 33.66 |
| 16 | 20 | 14/II/65 | 6/XI/65 | 8m.23d. | 2,583.93 | 1,466.36 | 1,294.67 | 5,344.93 | 522.64 | 35.60 | 9.80 | 5,352.07 | 34.63 |
| 17 | 20 | 14/II/65 | 6/XI/65 | 8m.23d. | 2,523.45 | 1,441.27 | 1,291.68 | 5,256.40 | 529.49 | 36.70 | 10.00 | 5,263.51 | 33.91 |
| 18 | 20 | 28/II/65 | 27/XI/65 | 9 mos. | 2,505.64 | 1,471.31 | 1,290.92 | 5,267.87 | 526.19 | 35.80 | 10.00 | 5,274.97 | 34.00 |
| 19 | 28 | 7/III/65 | 27/XI/65 | 8m.20d. | 2,518.95 | 1,389.84 | 1,291.77 | 5,200.56 | 500.00 | 36.00 | 9.60 | 5,209.05 | 33.78 |
| 20 | 20 | 28/III/65 | 27/XI/65 | 8 mos. | 2,436.05 | 1,429.58 | 1,292.29 | 5,157.92 | 508.33 | 35.50 | 9.90 | 5,165.02 | 33.37 |

ADMINISTRATION

## Self-help Section

The Self-help Section is in charge of organizing, orienting and implementing the mutual-aid and self-help programmes.

Because of the complexity of these self-help programmes, this section must be organized in a special manner, and have its own staff.

The Self-help Section is directly under the Department of Engineering. It is composed of two Offices: Technical Orientation and Social Orientation.

The staff of this Section is directly responsible to the Head of the Programme.

A detailed explanation of the operation of this Section follows.

### Specific functions of the Head of the Programme

His direct superior is the Head of the Engineering Department.

(1) He reports on all activities to the Head of the Engineering Department, and sends copies of his reports to the President and to the Manager of the Institute.

(2) He reports, well in advance, on future programmes, for purposes of estimating staff requirements.

(3) He receives preliminary studies conducted by the Technical and Social Orientation Offices, and expresses his opinion with regard to those studies and their relation with the Project, Supervision and Urban Development Sections of the Engineering Department.

(4) He determines the policies for orienting and organizing the participating families so that the work may go ahead smoothly.

(5) He establishes the controls and supervision necessary for the proper execution of the programme.

(6) He requests the joint support of the Departments of Engineering and Social Services, through established channels.

(7) He requests the necessary co-operation from other Departments, through the Head of the Engineering Department.

## Office of Social Orientation

### Functions

(1) To recommend the location and housing policies of the programme

In order to make sure the recommendations fulfil their purpose, research is focused on demographic potential, payment capacity of participant families, leisure time, schooling, preferred zones, acceptance of the programme, and such other information as may be helpful in getting a realistic picture of the true needs of the human group. This criterion enables the Institute to locate the projects at the best place possible and design the houses for maximum functions. Thus the State's resources are used to the best advantage, while previously analysed human resources are also properly canalized.

After the preliminary study has been made, the Office recommends the zone where the programme will be more highly accepted in order to begin construction. Also, it provides the Projects Section of the Engineering Department with all the information (way of living of the families, payment capacity etc.) needed to plan the architectural design in a way that will meet the needs of the future occupants.

(2) To publicize the projects

The work being done and its purposes are publicized in order to prepare for the exploratory studies and to obtain the co-operation of the community under consideration.

The projects are widely advertised in order to awaken among the people a desire to participate in them, and to create a favourable atmosphere for their implementation and expansion to other groups.

Publicity is achieved through interviews with local leaders and authorities, meetings, posters and other suitable media.

(3) To recommend the selection of candidates

The candidates are selected on the basis of socio-economic studies carried out by this Section and by the Social Services Section of the Real Estate Department, in order to ensure that the plans are directed towards the actual beneficiaries of the programme.

The selection is made according to the following criteria: size and composition of the family; acuteness of the housing problem; financial situation; interest in the programme; schooling; occupation; leisure time; attitude towards the programme. Once these steps are completed, the eligible candidates are recommended for selection by the Head of the Programme.

(4) To orient and organize the different groups of participating families

The families receive orientation during the entire process of organization of the groups, in order to enable them to participate effectively in the project. The necessary meetings are held (a minimum of three during the stage prior to construction), to explain the following aspects: the motives and objectives of the mutual-aid and self-help programme; the responsibilities of the participants and of the institution; the cost and design of the units and materials, proper use of the housing etc.

The participant groups are organized in co-operation with the Technical Orientation Office, on the basis of the number of units to be built, the weekly working schedule, composition of the family, family income, and occupations of the active members.

At the meetings, the different groups are trained in building; they are organized in such a way that, by instilling in them a feeling of group unity, they may be motivated to act as a unit, with a sense of responsibility. Part of this is achieved by organizing a board of directors or some other body to manage the internal affairs of the group.

(5) To ensure that the groups continue to meet their obligations to the programme

In order to keep group morale high and to keep the members working better, periodic meetings are held with the participants, for the purpose of educating them and strengthening and maintaining the relationships established. The progress charts are reviewed in co-operation with the Technical Orientation Office so that the group will be informed of the progress of the work. A sense of duty is infused in the people so that they will properly apply the established controls (attendance, control of tools, proper use of materials, discipline, work schedule, responsibility etc.). Whenever necessary, adjustments are made in the project, always in the best interests of the participating groups.

(6) To participate actively in the periodic evaluation of the different projects under way and make recommendations on necessary adjustments

The final evaluation provides conclusions that are valuable records of experience, for reference in planning future projects.

The causes of absenteeism and poor performance of any participant are investigated whenever such an attitude persists.

Case work and group work methods of social service are applied when irregular situations arise that interfere with the progress of the work.

(7) To carry out such social activities as may be advisable for the proper execution and success of the programme

## Office of Technical Orientation

Functions

(1) To study and analyse the necessary background information regarding the proposed site, evaluating the location of the project, and to prepare the respective reports to the Head of the Programme.

(2) To recommend the design for the urban development and for the housing units, as well as the building systems, to the Projects Section of the Engineering Department, in order to ensure that they are adjusted to the specific modalities of the system. For this the following aspects, among others, must be taken into account:

(a) Prior research on the family groups;

(b) Housing policies of the Institute;

(c) Establishment of minimum building standards;

(d) Availability of building materials in the market.

(3) To work out a preliminary plan for the execution of the projects, in order to establish:

(a) A suitable working schedule;

(b) Classification of jobs by experienced and inexperienced labour;

(c) Participation of the families in the building work;

(d) Organization of work groups;

(e) Physical progress calendar;

(f) Delivery of materials;

(g) Administrative and technical controls;

(h) Physical execution of the project;

(i) All operations relative to the development of the programme.

(4) To assign both clerical and field staff to supervise the construction work. This supervision falls into two categories:

(a) Supervision of work done by the participants, according to schedules specifically arranged for them;

(b) Supervision of work contracted either directly or by public bidding.

The Office makes the field work assignments and records all data regarding costs, progress and performance of the workers. The clerical staff prepares summaries of these data and transfers them to graphs. These summaries and graphs are analysed for record-keeping purposes, as these records will be most helpful in planning future programmes.

(5) To ensure that construction materials are efficiently supplied, and that they are used according to plans and budgets.

(6) To orient and train the families with regard to the building systems to be used in the project, especially those for which they provide physical labour. For this it is essential to programme a number of orientation sessions before beginning the work and the training to be applied during the execution of the work.

(7) To co-ordinate with the other administrative departments.

Services provided by the Projects Section of the Engineering Department

(1) Once the blueprints of the proposed sites are finished, the Projects Section provides the following data:

(a) Location of the site with respect to the urban network of the city;

(b) Access streets, size of site and level curves;

(c) Public services available;

(d) Neighbouring community facilities;

(e) Price of land;

(f) Other pertinent information.

(2) After the Office of Technical Orientation has studied the sites proposed for the projects and made its recommendations for the preparation of the development and housing blueprints, the Projects Section:

(a) Prepares the final project and blueprint for the site development, as well as for the dwellings;

(b) Draws up the construction blueprints;

(c) Lists the materials and the building system to be used, keeping in mind the recommendations of the Technical Orientation Section;

(d) Plays its part in the execution of the projects, within the established organization of the Department.

(3) The Section prepares all the plans, budgets and specifications for works to be submitted to public bidding.

## Staff that took part in the project - 200 units, 1964

2 engineers (only one worked full-time)
1 architect
3 social workers (including the head social worker)
4 master builders
1 timekeeper
1 costs clerk
1 storeroom clerk
3 storeroom aides
1 secretary
1 messenger

## Staff that took part in the project - 260 units, 1965

1 chief engineer
1 co-operating engineer (not full-time)
1 social worker (head)
3 social workers (field)
5 master builders
1 costs clerk
1 timekeeper
1 storeroom clerk
3 storeroom aides
1 secretary
1 messenger

## Organization of the social work

### First project

1 social worker - head social worker, in charge of 58 families consisting of two groups of 28 and 30 families. Publicity and preparation of second project.

1 social worker - in charge of 78 families consisting of four groups, three of 20 and one of 18 families.

1 social worker - in charge of 64 families - three groups, two of 20 and one of 24 families.

### Second project

1 social worker - in charge of 128 families - five groups, two of 28 and three of 24 families.

1 social worker - in charge of 92 families - four groups, one of 28, one of 24, and two of 20 families.

1 social worker - in charge of 40 families - two groups of 20 families each.

The social worker who had only two groups was responsible, in co-operation with the head social worker, for preparing the 1966 programme.

The social workers on the second project did not take part in the first; both projects were used for staff training purposes.

## Staff in charge of construction

The responsibility for the supervision and direction of the building work was divided between the engineer and the architect.

The work groups were assigned to each master builder in such a way that each would take care of approximately 50 houses. This distribution was applied to the 200-unit project as well as to the 260-unit project. Only one engineer worked full-time in the supervision of the entire building process.

## Annex I

### INTERNAL REGULATIONS FOR THE GROUPS IN THE MUTUAL-AID PROGRAMME

Art. 1. This Regulation shall govern the internal activities of the family groups participating in the Mutual-Aid Programme, for the purpose of ensuring good relationships among the participants and success in the construction of the dwellings.

Art. 2. Each group shall democratically elect a board of directors consisting of a co-ordinator, an auditor, a treasurer, a secretary and a vocal, who must be heads of their respective family groups (applicant).

Art. 3. The positions noted in the previous article shall be served voluntarily, with no right to any remuneration whatsoever. These positions do not relieve the incumbents from the obligation of contributing their own personal labour.

Art. 4. The Co-ordinator shall be responsible for liaison between the group and the programme leaders. His duties shall be the following:

(a) To request and receive, in representation of the members of the group, the building materials supplied by the Institute, upon authorization of the master builder;

(b) To sign the corresponding receipts enough in advance to avoid paralysis of the works because of shortage of materials;

(c) To co-operate with the programme leaders in co-ordinating the work to be done;

(d) Together with the Secretary, to convoke the regular and special meetings, and chair them;

(e) To report on the progress of the work, and hear opinions and suggestions from the participants;

(f) Together with the Treasurer and the Auditor, to sign the vouchers for transactions originating in the group's decisions;

(g) To sign the minutes and correspondence relating to matters of an administrative order; and

(h) To co-operate in all activities that favour the project.

Art. 5. The Auditor has the following duties:

(a) To ensure that the Regulations for Participation are complied with, as well as resolutions approved by the group and the Institute, especially with regard to proper use of materials;

(b) To check on the actions of the Board of Directors, and on the management of funds;

(c) To inform the group, meeting as an Assembly, of any proven irregularity;

(d) Together with the Co-ordinator and the Treasurer, to sign the vouchers for financial transactions; and

(e) To co-operate in all activities that favour the group's actions.

Art. 6. The Treasurer shall have the following duties:

(a) To request, receive and be the custodian of the tools, equipment and fittings provided by the Institute or acquired by the group, keeping for this effect an inventory of same;

(b) To receive, hold in trust and spend the money that enters the group fund, depositing it in a bank account;

(c) To carry the books on income and expenditures and report periodically to the Board of Directors and to the group;

(d) Together with the Co-ordinator and the Auditor, to sign the vouchers for financial transactions; and

(e) To co-operate in activities assigned to him that favour the group.

Art. 7. The Secretary has the following duties:

(a) Together with the Co-ordinator, to convoke the regular and special meetings;

(b) To verify the quorum;

(c) To prepare, with the Co-ordinator, the order of the day or agenda;

(d) To write and record the minutes of each meeting in a special book, and be custodian of same;

(e) To receive, answer, sign, mail and file correspondence; and

(f) To co-operate in other work assigned him, provided it be to the benefit of the group.

Art. 8. The Vocal shall:

(a) Keep a check on the personal work schedule of the group members, on the forms provided by the institution, and keep the statistics up to date. These statistics shall be presented every month or upon request;

(b) To represent all the members of the group, by voice and vote, at the meetings of the Board of Directors; and

(c) To substitute for the Co-ordinator in his absence.

Art. 9. If a participant should be unable to attend work for a justified reason, he may appoint a construction worker to substitute for him in his absence; but for this purpose he shall send a written note to the social workers, who shall pass on the information to the head engineer of the works and the group co-ordinator.

Art. 10. Unexcused absences shall be penalized with a fine of a minimum of one colon per hour or fraction thereof. This fine shall not excuse the absentee, and his absenteeism shall accumulate to the total amount allowed by the Institute.

The fine referred to in this article must be paid in cash within a week following the absence and shall be collected by the group treasurer, who shall issue a receipt for same.

Art. 11. If any member's conduct should be offensive to morality, the public order and good habits, he shall be expelled from work immediately and his absence considered unexcused.

Repeated misconduct shall be penalized in accordance with the Regulations of Participation.

Art. 12. In the event of loss or destruction of the group's tools, materials or working equipment, it must be responsible to the Institute for the damage.

## Annex II

### CONTRACT FOR PARTICIPATION IN THE MUTUAL-AID PROGRAMME

WE, EDUARDO NAPOLEON DELGADO and _____, the former being thirty-six years of age, a civil engineer, and a resident of this vicinity, with personal identity card number two-hundred twenty-one thousand four-hundred and eighty-three, issued by the Alcaldia Municipal of this city, on the _____ day of ____, nineteen hundred and ____, acting in his position as President of the Instituto de Vivienda Urbana, an autonomous government public utility corporation, of this domicile, who in the course of this contract shall be referred to as "the Institute", and the latter being _____ years of age, _____, also of this domicile, with personal identity card number _____, issued by the municipal authorities of _____, on the _____ day of _____, nineteen hundred and _____, who shall hereinafter be referred to as "the Participant", now hereby agree to celebrate and to the effect do celebrate, in accordance with the laws of the land, a contract of participation, to be governed by the following clauses: FIRST: The Participant declares that it is his will to become part of group number _____, formed for purposes of common action and solidarity, to undertake the construction of _____ dwellings under the Mutual-Aid Programme, for which the Institute has conferred on him the character of Participant entitled to allocation by lot of one of the said housing units, once the construction of same has been completed. SECOND: The Participant formally undertakes to voluntarily contribute, with no right to remuneration whatseover, all the labour that may be necessary for the construction of all the houses, which work he shall perform permanently to the benefit of the above-mentioned group and above and beyond any personal benefit. THIRD: In view of the fact that this programme is designed for the sole purpose of providing hygienic, comfortable and economic housing for the participants and their family groups, it is clearly established that no labour relationship exists between the participants and the Institute. FOURTH: Considering that the Regulations for Participation in the Mutual-Aid Programme, approved by the Board of Directors of the Institute in Item Forty-Six, Minutes Number Eleven, of February twenty-fifth of this year, have taken into account the basic aspects of organization and regulations for the groups of participants, it is agreed that said Regulations shall be incorporated, as written and approved, as an integral part of this participation contract. FIFTH: This contract shall enter into force on the _____ day of April next, at which time the construction of the housing units shall begin.

By virtue of which we sign this contract in duplicate, in San Salvador, on the _____ day of _____ of nineteen hundred and sixty-four.

# ETHIOPIA

## THE KOLFE HOUSING PILOT PROJECT AT ADDIS ABABA

By Ettore Nobis, Research Officer, Department of Architecture, University of Lund

## INTRODUCTION

Like many other developing countries, Ethiopia is experiencing the impact of rapid socio-economic change. The disorder that derives from this process is accentuated in the rapidly expanding urban areas which are growing and developing mainly as a result of the disorganized efforts of people with few resources. The lack of public resources for controlling and planning urban development aggravates the problem. Nevertheless, it is essential to control the forces which are producing not only an unsuitable but a directly harmful physical environment. The problems facing a city like Addis Ababa are so pressing that they require immediate action. In view of these conditions, the productive capacity of popular forces and self-help measures must be depended upon. Only the organized contribution of individual efforts will help in the orderly development of urban areas.

### The aim and objectives of the pilot project

The Kolfe housing pilot project was implemented to gain experience in relation to:

(a) Organization of techniques for large-scale housing production;

(b) Financing of housing;

(c) Development of suitable housing and infrastructural standards;

(d) Administration and management of housing.

The project was designed to tackle housing and urban development problems of "the middle class and particularly the poor section of the urban population".

Apart from its general concern for a sound environment and decent housing standards, the programme for the pilot project says very little with respect to the physical relationship between the housing product and the occupants' expectations. Rather, attention was paid to the economic and organizational aspects of the programme with clear guidelines being laid down in connexion with its economic aspects.

### Method of study

In preparation for the present evaluation of the pilot project, information was collected on:

Social and community activities;[1/]

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1/ This information was obtained through interviews with the occupants, with the estate manager and with staff of the women's welfare organization in Kolfe, and from a report on the sewerage system prepared by the Ethio-Swedish Institute of Building Technology (ESIBT).

Costs for the production of the project;[2/]

How the units are used;[3/] and

Administration and management of the pilot project.[4/]

General statistics and other information were obtained from the housing study carried out in 1967 by the Ministry of Public Works, Addis Ababa.

This information was sufficient to shed light on the following:

(a) The impact of rehousing on the daily lives of low-income families;

(b) The performance of technical services;

(c) The level and adequacy of community services;

(d) The kind of improvement the pilot project represents in terms of housing satisfaction for the individual families, and how the new standard affects the economy of the families;

(e) The relationship between improved housing and effective demand and how this can be generalized for the whole of Addis Ababa;

(f) Whether the designs of the two different types of houses satisfy the basic household requirement;

(g) The ease with which improvement, maintenance and extension could be achieved within the project.

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2/ This information was mainly obtained from bills of quantities. Some additional information was obtained from a publication of the Economic Commission for Africa (ECA) and from estimates given by ESIBT staff members.

3/ This information was obtained from the Municipality of Kolfe households survey; from an inventory of individual household's furniture, equipment and activities; from the application form completed by the current occupants before admission to the pilot project; from a questionnaire complementary to the Municipality survey.

4/ This information was obtained from interviews with the Director of the Department of Social Welfare, Census and Housing of the Municipality of Addis Ababa and from interviews with individuals and groups of occupants. The information was collected from a sample of 41 families composed of 6 families from the house type B2 (aided self-help), 30 families from the house type B2 (rented), and 5 families from the house type C2.

## ADMINISTRATION OF THE KOLFE HOUSING PILOT PROJECT

The Municipality of Addis Ababa owns the Kolfe housing pilot project which is managed by the Department of Social Welfare, Census and Housing. A social worker (estate manager) and a rent collector represent the Municipality in the project area.

The social worker's main function is to deal with case families in the project area as part of his social work in the entire Kolfe district. He also mediates in quarrels and reports to the Municipality on problems that may arise specifically in the project areas. The rent collector is a book-keeper who receives the rents and keeps accounts of their payment at the end of each month.

### Findings

#### Tenure

A temporary agreement made between the Addis Ababa Municipality as the owner and an individual or a family with low income as the client stipulates as follows:

1. The house is to be used only for dwelling purposes;

2. The monthly rent is between $E. 10 and 25, and the client must always pay at the end of the month;

3. The client is in no way allowed to modify and maintain the existing house; however he must report the part to be maintained or his grievance to the owner;

4. The client is expected to look after the house and keep it neat. Any maintenance cost caused by the client, his family or his guests shall be covered by the client;

5. The client shall use the house for himself and his family alone. No other family is permitted to share the already occupied house. No trade whatsoever shall be carried out in the house. The client has to follow and respect the rules and regulations drafted by the owner as regards the house and its surroundings;

6. If the client fails to pay the rent on time, or if he misbehaves and disturbs his neighbours, he shall be advised and warned by the chosen elders of the locality. If he ignores their advice and does not improve, he is reported to the owner. The client will be given a final warning two months ahead of time and thereafter shall be dismissed after having paid all the rent.

This agreement is kept by the Municipality; apparently the tenants are not given copies. This has caused some anxiety among the tenants.

Rent

The present rents charged by the Municipality in Kolfe are as follows:

| | Ethiopian dollars per month |
|---|---|
| For house type B2 (aided self-help) | 10 |
| For house type B2 (contractor-built) | 15 |
| For house type C2 | 25 |

When the project was conceived, it was assumed that the capital would be amortized within 15 years at an annual interest of 4 per cent. On this basis, costs for accommodation should have been as follows:

| | Ethiopian dollars per month |
|---|---|
| For house type B2 (aided self-help) | 23 |
| For house type B2 (contractor-built) | 51 |
| For house type C2 | 87 |

The relation between income and type of accommodation suggested by the programme was originally applied by the Municipality when allocating accommodation to applicants, but has now disappeared. The occupants of the B2 (aided self-help) houses generally have higher incomes than do the occupants of the B2 rented houses.

Currently, the occupants of the B2 aided self-help houses pay between 12.5 and 3.4 per cent of their incomes for accommodation; 26.6 per cent of the occupants of the B2 rented houses pay between 37.5 and 20.5 per cent of income for accommodation, while 63.33 per cent pay between 18.77 and 10 per cent and the rest between 8.8 and 6.8 per cent.

For the occupants of the C2 houses, the share of income for accommodation is currently between 20.0 and 10.6 per cent.

Many of the occupants have difficulty paying the rent and the instalments regularly. As of July 1970, of the surveyed families in the B2 aided self-help houses, two were one month in arrear, one, two months in arrear, and one three months in arrear. For the B2 rented houses, eight families were one month in arrear, three families, two months in arrear, four families, three months in arrear, one family, four months in arrear, two families, five months in arrear and two families were six months in arrear. In the C2 houses, one family was one month in arrear, one family, two months in arrear, two families, four months in arrear, and one family was six months in arrear. Families that are six months in arrear are brought to court and forced to pay. Up to now, several families have been taken to court but none has been evicted as yet.

Maintenance

So far, maintenance of the area has been carried out only once, on the sewerage system. The Municipality declares that resources for maintenance are very limited. It allocates money for the maintenance of the project after

consideration of particular needs. Costs are estimated by a contractor and approved by the Director of the Population Census and Welfare Section and by the vice-mayor.

Some maintenance has occasionally been carried out by some of the occupants, e.g., maintenance of portions of the surface drains, to prevent water from pouring into the house.

Improvements and extensions

Most people wish to improve the thermal qualities of the house by installing windows and ceilings. A large number of families have already improved their houses, but only three have enlarged theirs. Improvement of houses is financed through savings.

The total value of the improvements and extensions made by the 12 families is $E. 5,000.

Community organization

The occupants of Kolfe are organized in the local Edder which is the traditional Ethiopian co-operative established mainly for mutual assistance. The Kolfe Edder has one permanent chairman, one vice-chairman and one treasurer. Meetings are arranged once a month or as needed. The membership fee is $E. 1 per member per month. The Edder owns two large tents which are loaned to the members for wedding and funeral ceremonies.

Many occupants expressed the wish to extend the functions of the Edder to include activities for the maintenance, improvement and extension of the houses. At the same time, it was felt that the current terms of the lease agreement and the attitude of the Municipality were hindering any initiative in this respect.

Profile of the occupants

The average family size for the occupants of the B2 (aided self-help) house was 6.4 persons, ranging from 4 to 9 persons. The average family income was $E.152 per month, ranging from $E. 82 to 295 per month. Occupancy ranged from 1.94 to 5.83 square metres of habitable room per person (kitchen, lavatory, and veranda excluded).

The average household has increased by 0.9 persons since moving into the Kolfe pilot project (see figure II).

Change in household income

Similarly, household incomes have risen substantially. It is significant that the income of households occupying aided self-help houses has risen more sharply than the income of families living in contractor-built houses (see figure III).

FIGURE I. SITE PLAN OF THE KOLFE HOUSING PILOT PROJECT

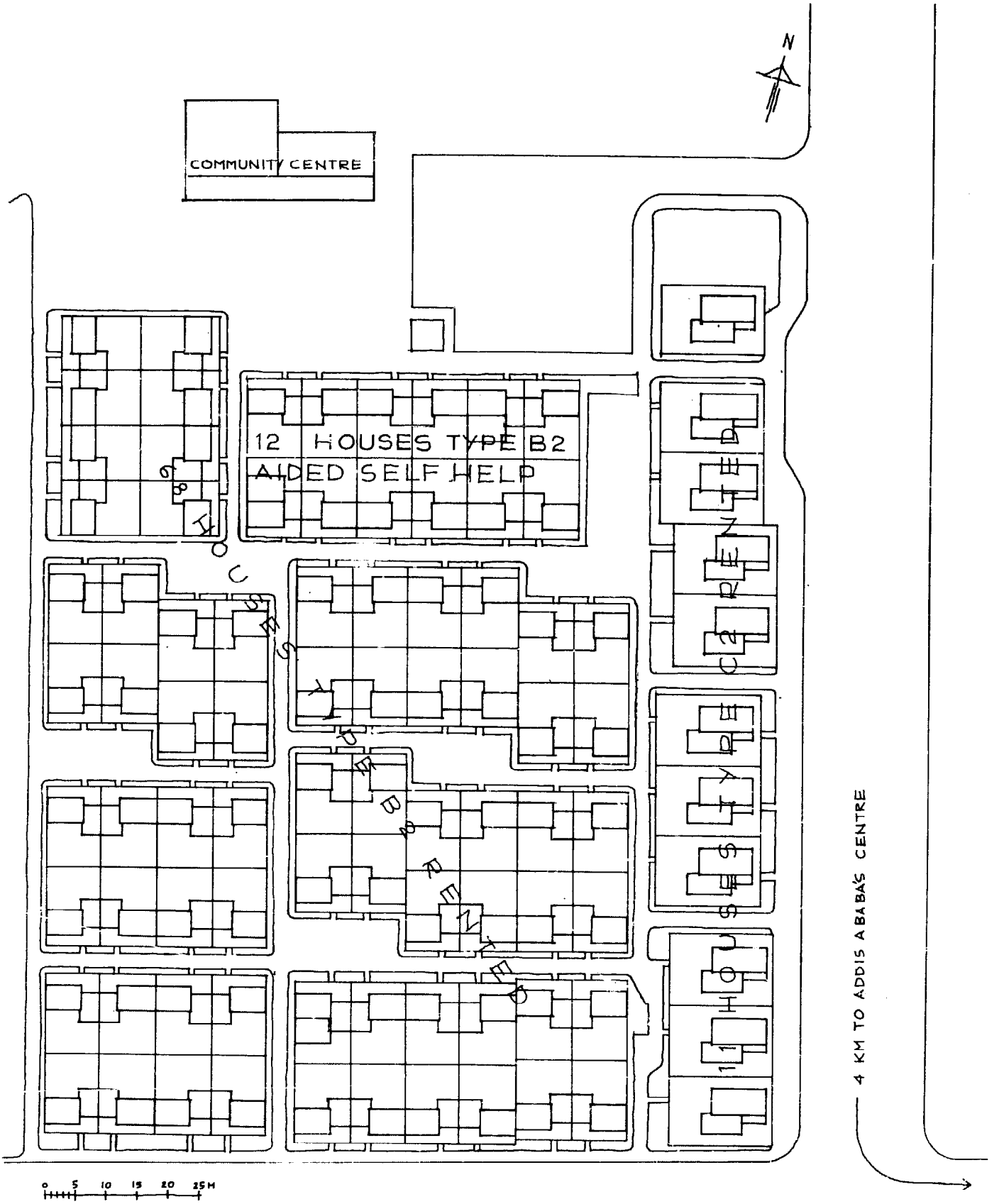


FIGURE II. SIZE OF FAMILIES IN THE KOLFE HOUSING PILOT PROJECT

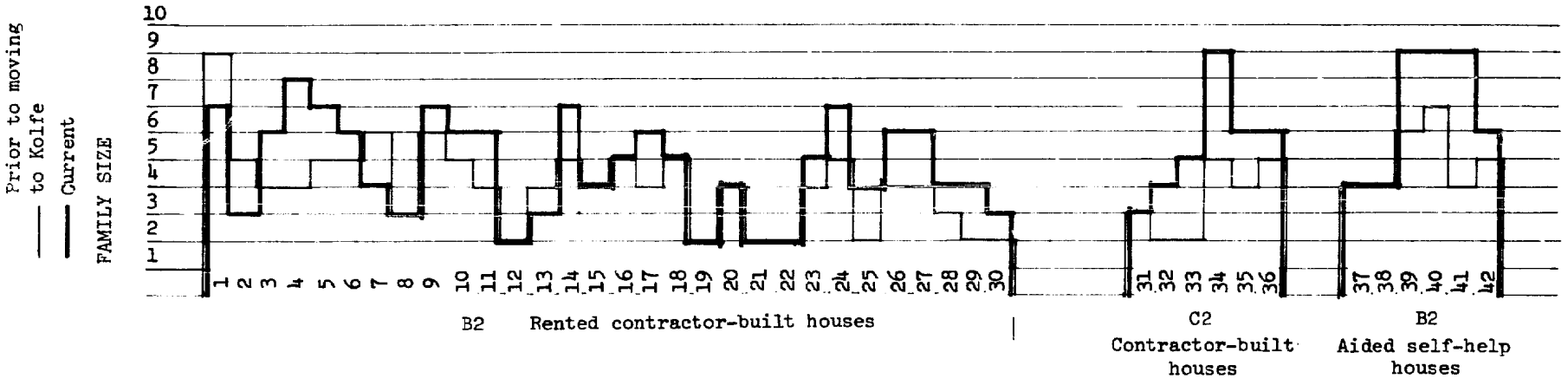
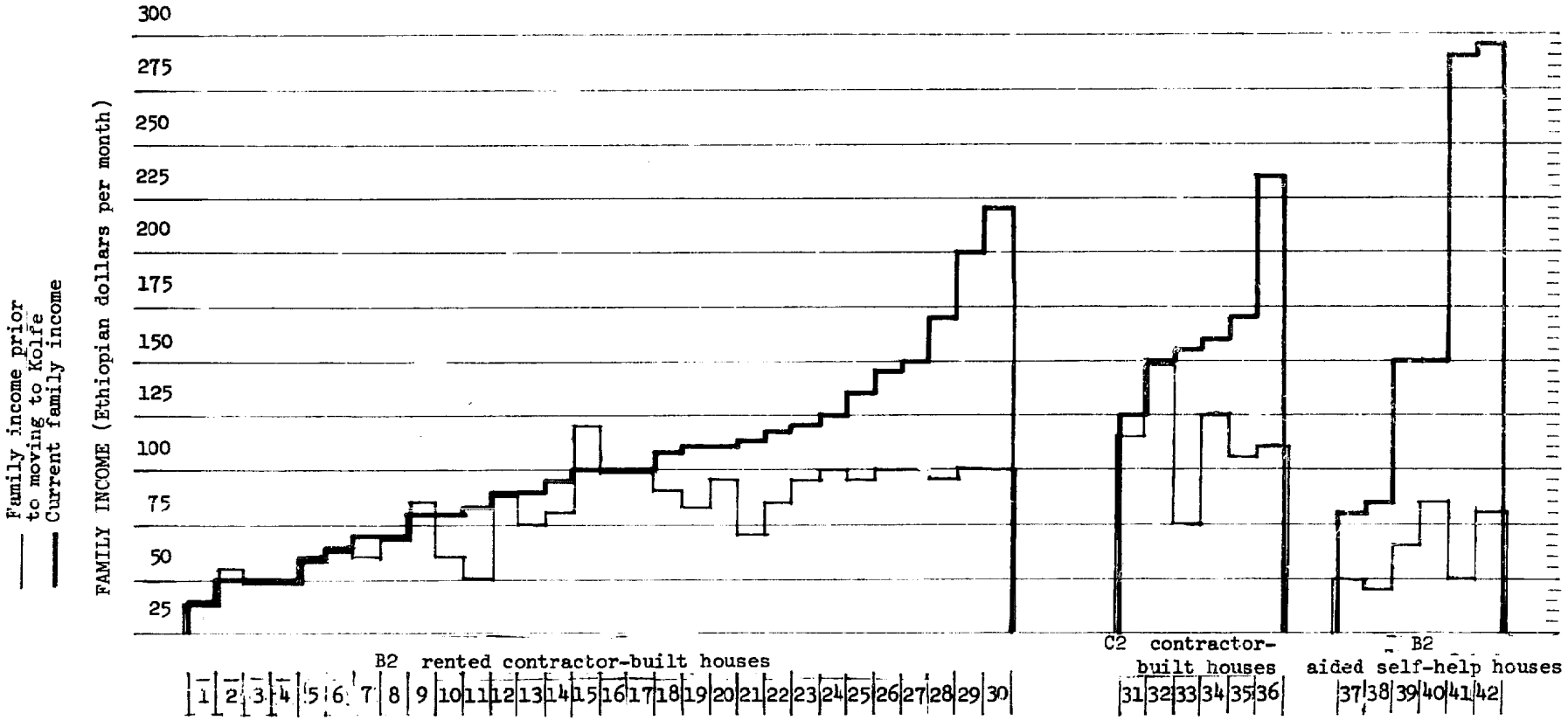


FIGURE III. CHANGE IN HOUSEHOLD INCOME IN THE KOLFE HOUSING PILOT PROJECT



All the occupants described the state of their previous accommodation as poor or very poor. They were conscious of the neatness of their surroundings and took enormous pride in their homes and gardens.

Services in the Kolfe area

Public buses serve the area regularly and most occupants say that they use them every day, though they believe that the cost ($E. 6.20 a month) is too high.

Most of the occupants work in the town, many of them in connexion with the Central Market, which commercially dominates the Kolfe people as well as large portions of the population of Addis Ababa.

No commercial activities are permitted in the project area except for the co-operative shop which provides a limited range of goods.

The community centre and the nearby elementary school provide the occupants with an unusually high level of social services. Most of the occupants make regular use of these services, especially the health and education services.

The open space is used mainly to take the place of the ceremonial tent. This benefits the houses adjacent to the open space.

Garbage is collected regularly once a week by the Municipality. Half of the occupants keep garbage in bins which are emptied on the day of collection; the rest store refuse somewhat haphazardly.

Unpaved walkways and open spaces tend to be very muddy during the rainy season. The surface drains in many sections were exposed above the surface level of the walkway due to erosion. This prevents them from functioning properly.

Treatment of sewage from B2 houses[5/]

In each of the B2 houses, the sewage is treated in the tank of the aqua privy below the Turkish type WC. The tank is always filled with water from the shower and the wash basin. The tank has a length of 1.7 m, a width of 0.7 m and a depth of 1.3 m. The water depth is 1.0 m or 0.3 m below the Turkish type WC, giving a water volume of 1.2 $m^3$. The volume corresponds to an average of about 0.3 $m^3$ per user. The outlet is a 10-cm concrete pipe, which is protected by a metal baffle. The 10-cm discharge pipe from the Turkish WC submerges about 0.15 m into the water of the tank and makes a water seal. In each aqua privy, sedimentation of the sewage and some decomposition of the sludge take place (see figure IV).

Treatment of sewage from C2 houses and the community centre

The sewage from the community centre and the C2 houses is treated in a septic tank. The septic tank consists of two chambers measuring 2.8 m x 3.7 m x 1.9 m and

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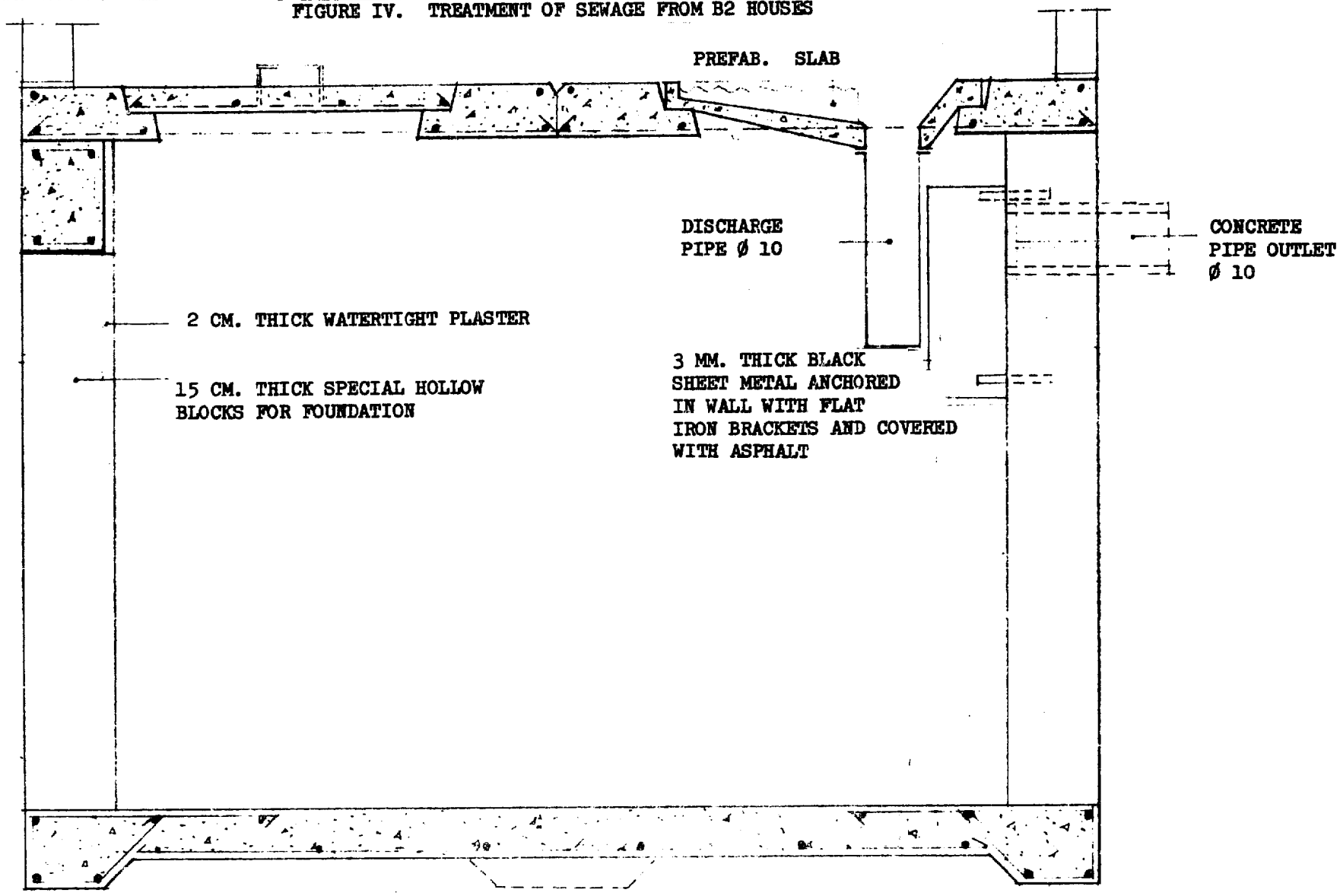
5/ From "The sewerage system for a low-cost housing pilot project", by D. Ostensson.

FIGURE IV. TREATMENT OF SEWAGE FROM B2 HOUSES




CROSS SECTION
AQUA PRIVY TANK
SCALE 1:10

2.8 m x 1.9 m x 1.9 m. The water depth is about 1.6 m. The inlet and the outlet are constructed of 15-cm and 10-cm concrete pipes, and are provided with a baffle of metal. The bottom slab and the cover are of reinforced concrete. The walls are of stone masonry laid in cement mortar. Sewage enters into the first chamber in the upper left corner and goes to the second chamber through a hole in the partition wall in the right part of the wall. The outlet is placed in the second chamber in the upper left corner. This is done for the sake of good sedimentation. In the septic tank, the sludge undergoes sedimentation and some decomposition (see figure V).

Sewage disposal through a percolation field

The sewage both from the septic tank and the sewer system of the B2 houses is discharged to a percolation field, located near the project area. The effective area of the percolation field is about 50 m x 50 m. Grass, plants and small shrubbery are planted over the field, and the whole plot is fenced in.

Sewage is first led to a distribution pit with a diameter of 60 cm. From this pit, the sewage is distributed through a total of 600 m of 10-cm concrete pipes with open joints. At all corners of the network, there are inspection pits 50 cm in diameter. These are covered with concrete lids. The bottom width of the trenches is 90 cm, giving a total absorption area of about 540 $m^2$. There is about 1.1 $m^2$ per user or 3.8 $m^2$ per bedroom of absorption area. The pipes are laid on granular material and covered with hay, straw and paper (see figures VI and VII).

The B2 house

Figure VIII shows the layout of the B2 house. Some of these houses were built by a contractor, others by the self-help method.

The photographs in figures IX and X are views of the internal and external arrangements of the house.

The C2 house

All the occupants of the C2 house (see figure XI) find it adequate in size and consider the plot large. The house is, in principle, used as suggested by the layout, though all the families use the smaller bedroom for storing household equipment and food-stuffs, with the exception of one family which uses the smaller bedroom for storage and sleeping.

Extensions, improvement, and maintenance

All the families in the B2 houses (aided self-help and contractor-built) say they need additional space for storage and sleeping. Up to now, only three families in the whole area have completely enlarged their houses according to the layout. Many other families have made other extensions, such as temporary sheds for storage, with varying standards from neatly built and painted wooden stores with locks to very simple wood constructions with corrugated iron sheet covers (see figure XII).

FIGURE V. TREATMENT OF SEWAGE FROM C2 HOUSES AND THE COMMUNITY CENTRE

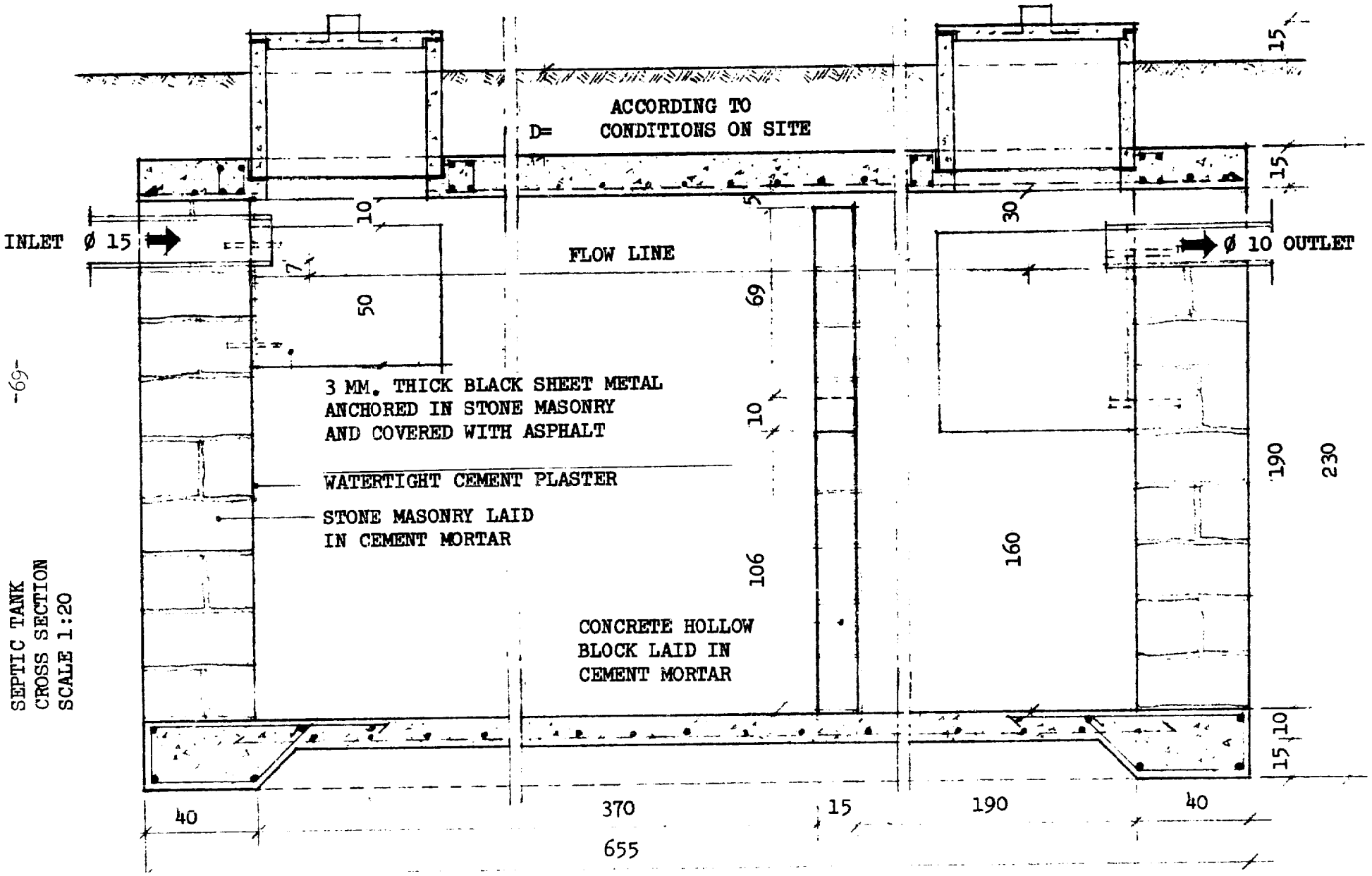
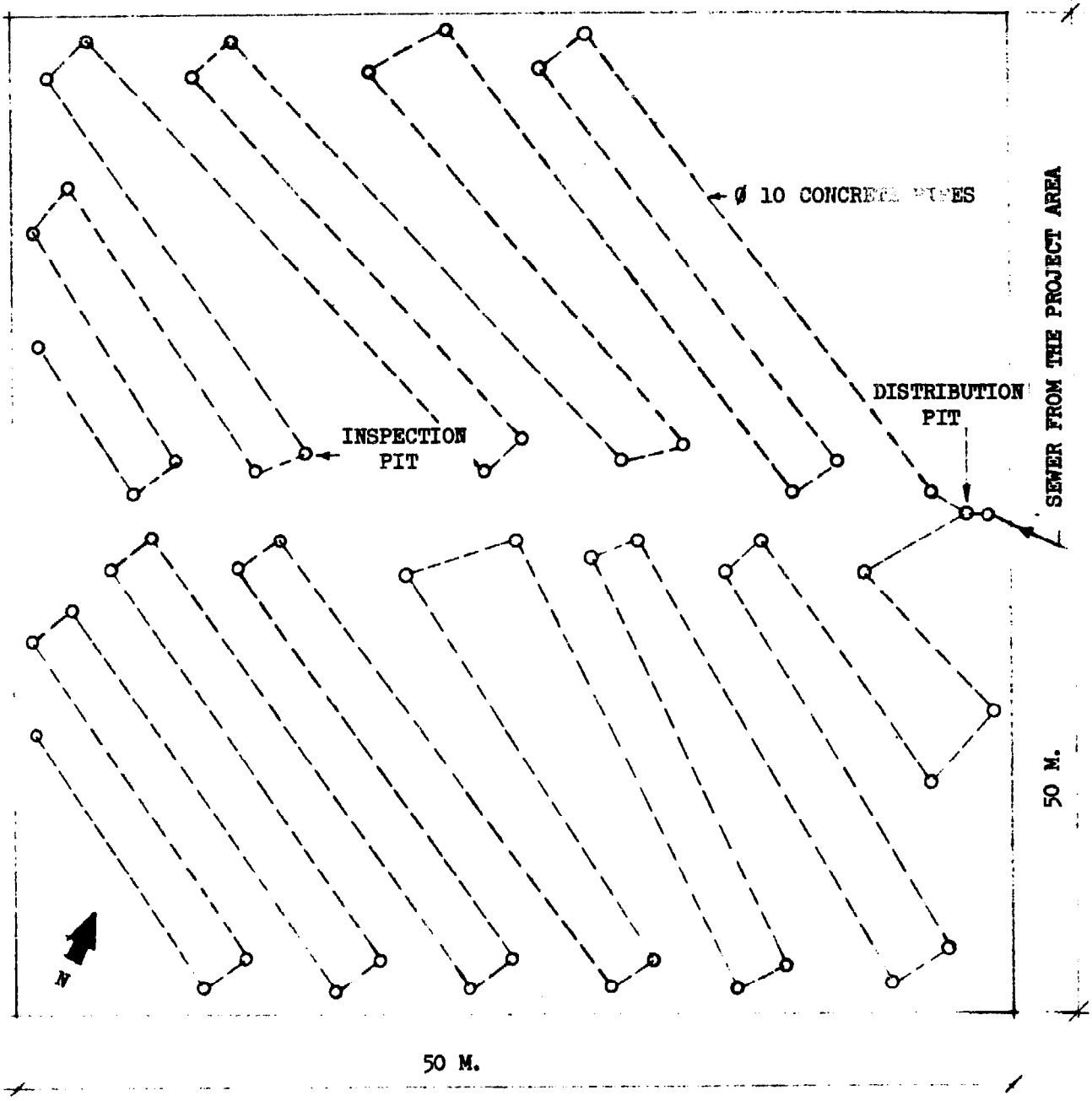
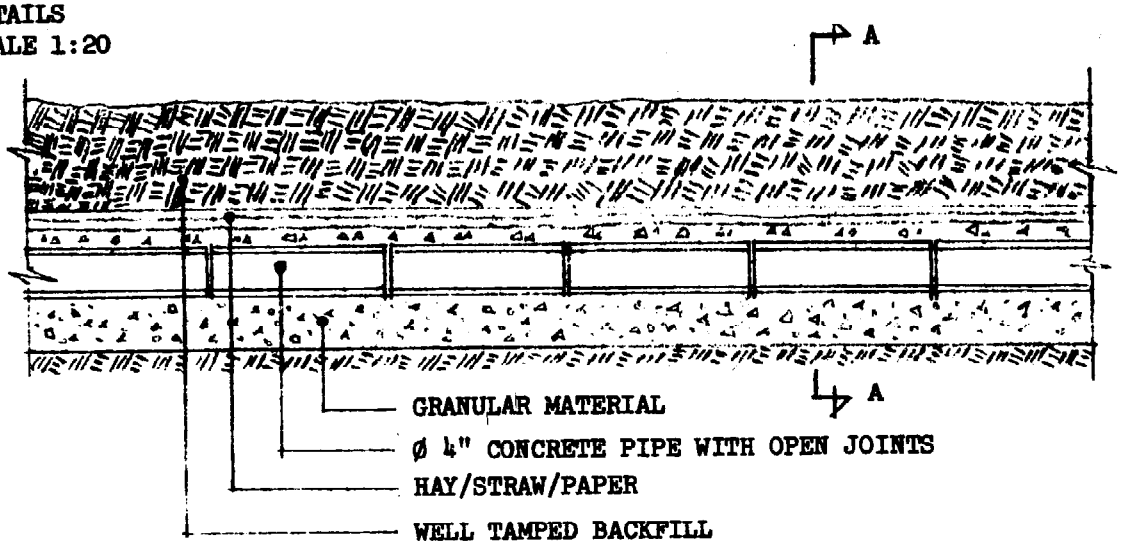


FIGURE VI. SEWAGE DISPOSAL THROUGH A PERCOLATION FIELD

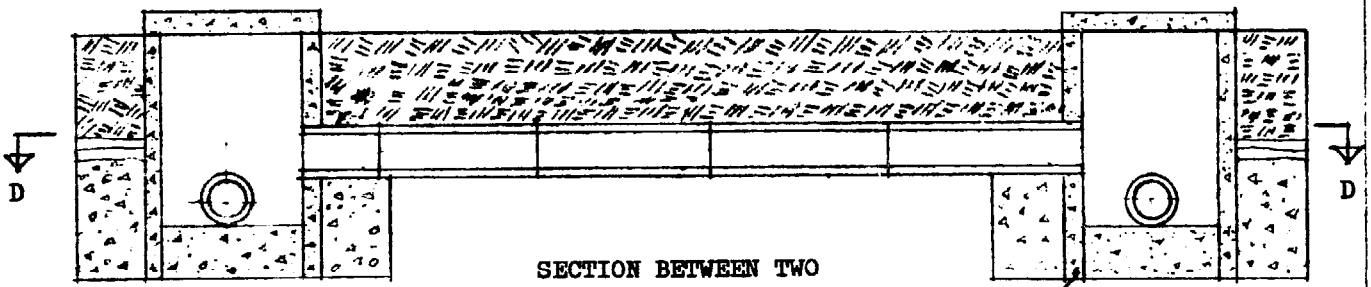



PERCOLATION FIELD SCALE 1:300

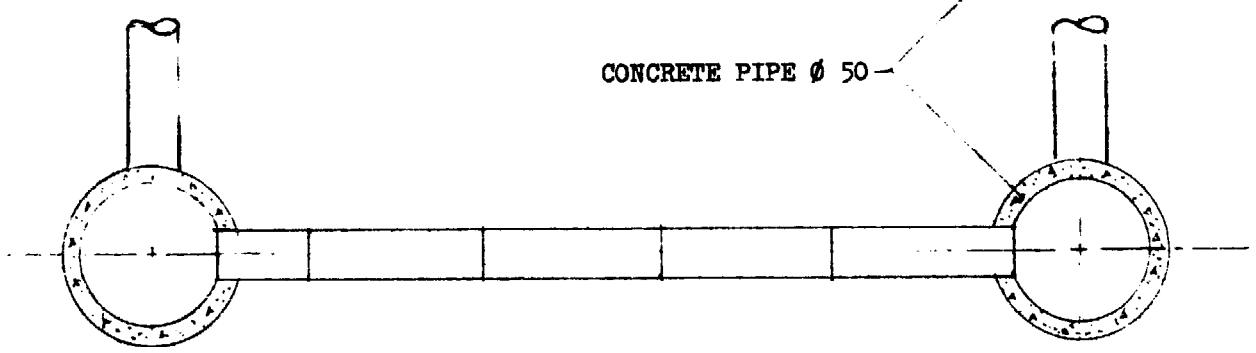
PERCOLATION
DETAILS
SCALE 1:20



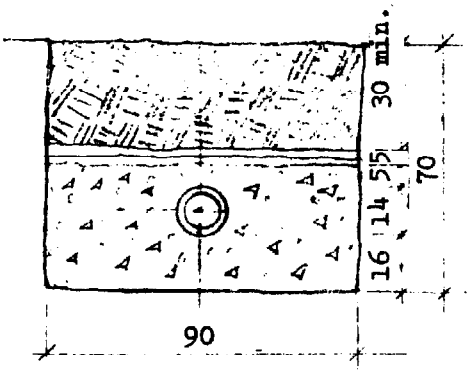

SECTION OF TRENCH WITH PIPES



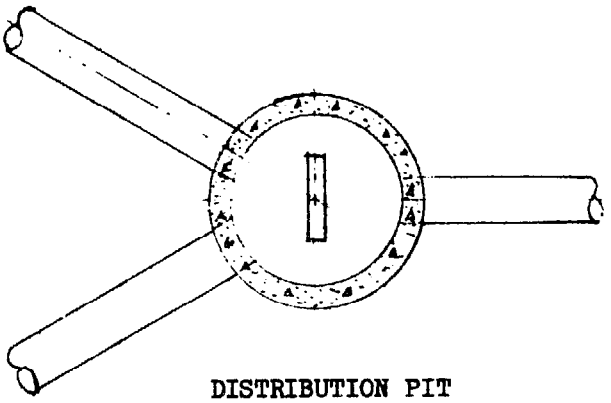

SECTION BETWEEN TWO
INSPECTION PITS




SECTION D-D




SECTION A-A



DISTRIBUTION PIT

FIGURE VIII. LAYOUT OF THE B2 HOUSE

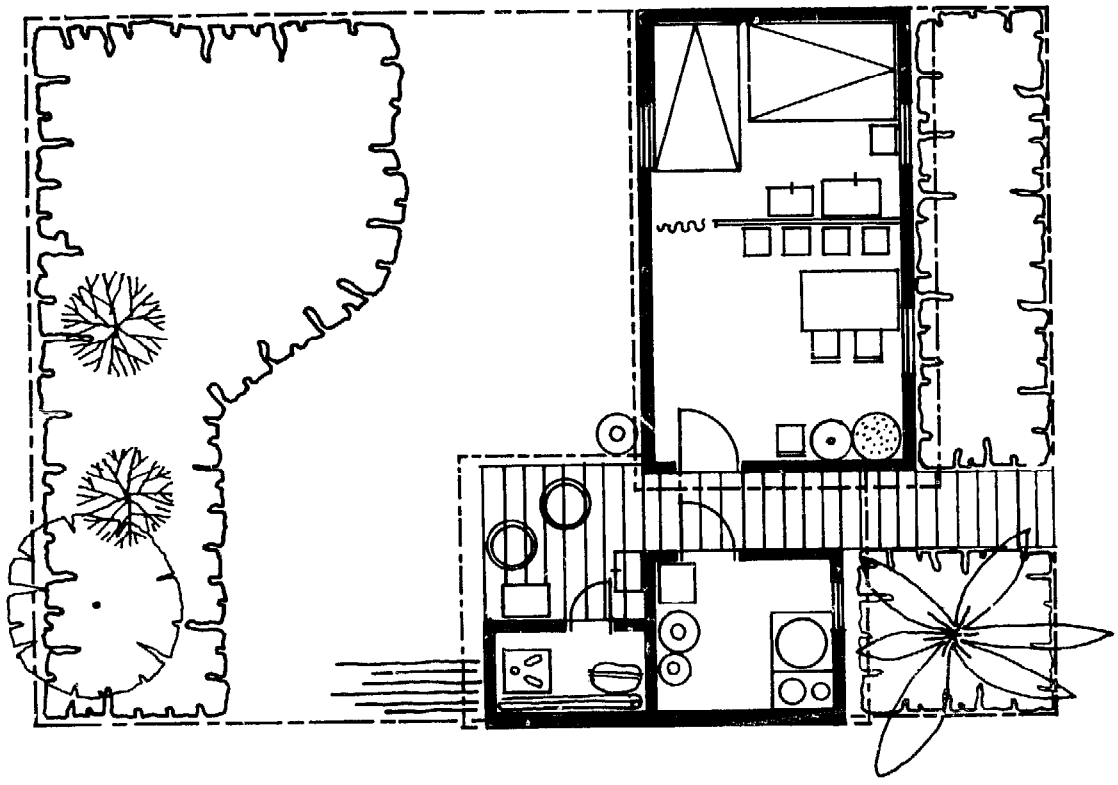
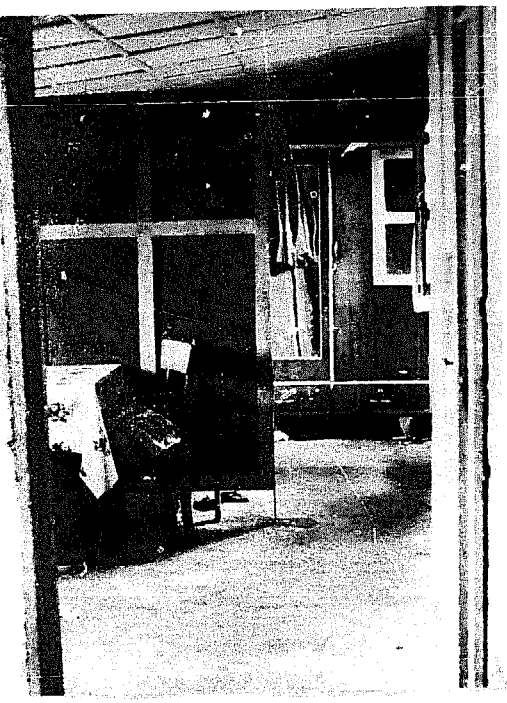
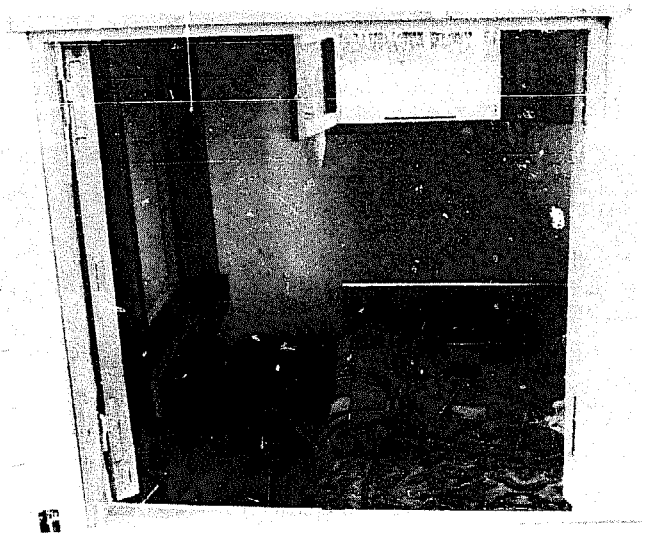
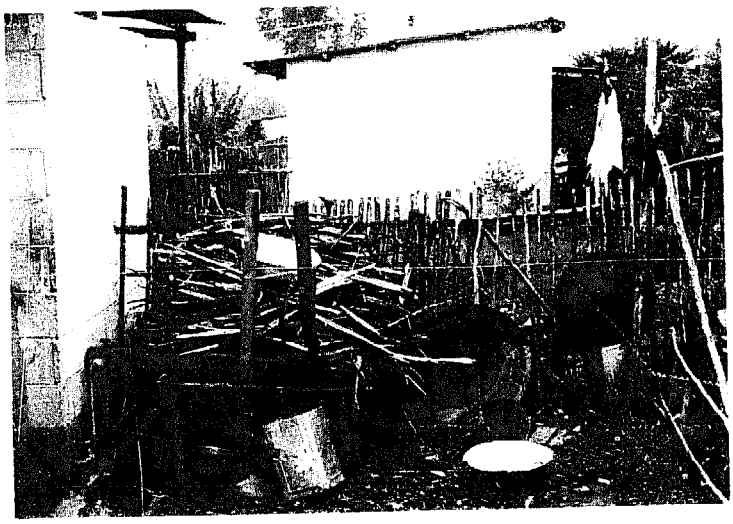


FIGURE IX. INTERIOR AND EXTERIOR VIEWS OF A B2 HOUSE



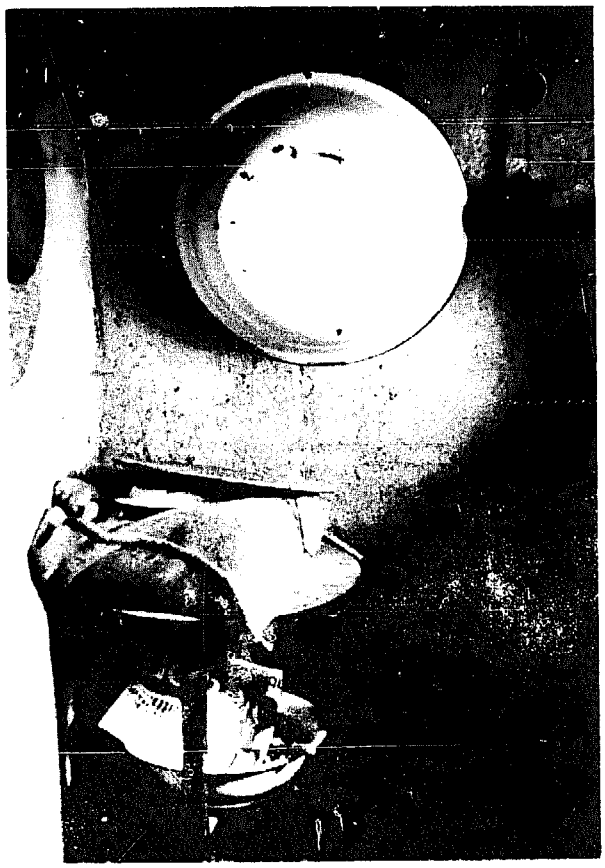


Interiors of a B2 house



Exteriors of a B2 house

FIGURE X. LIVING IN A B2 HOUSE



The kitchen

FIGURE XI. LAYOUT OF THE C2 HOUSE

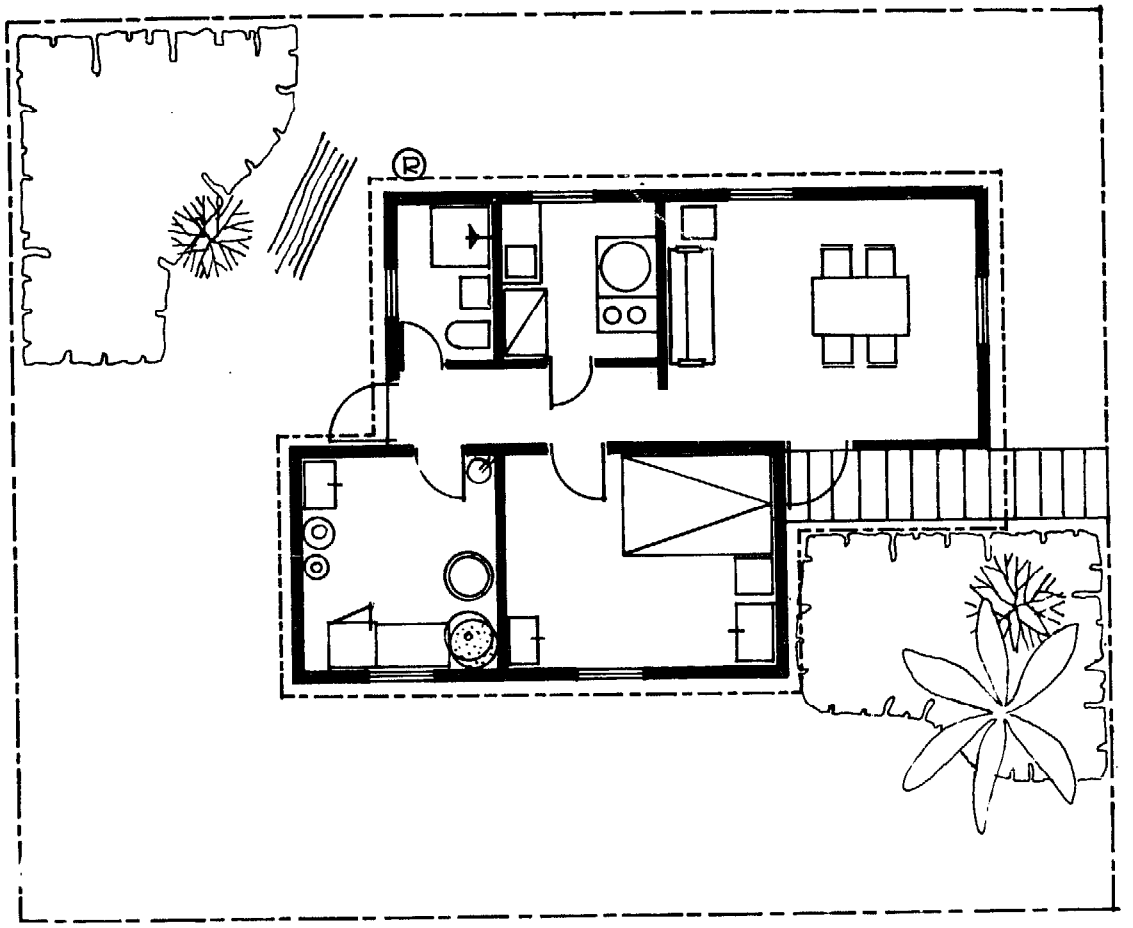
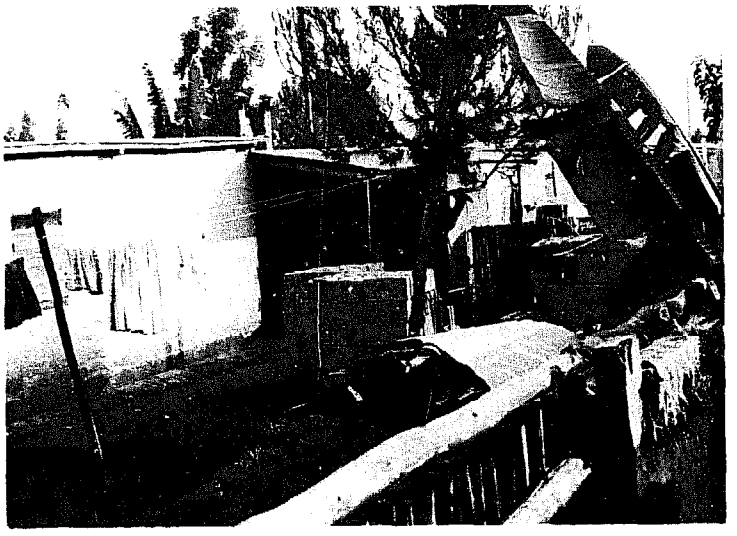
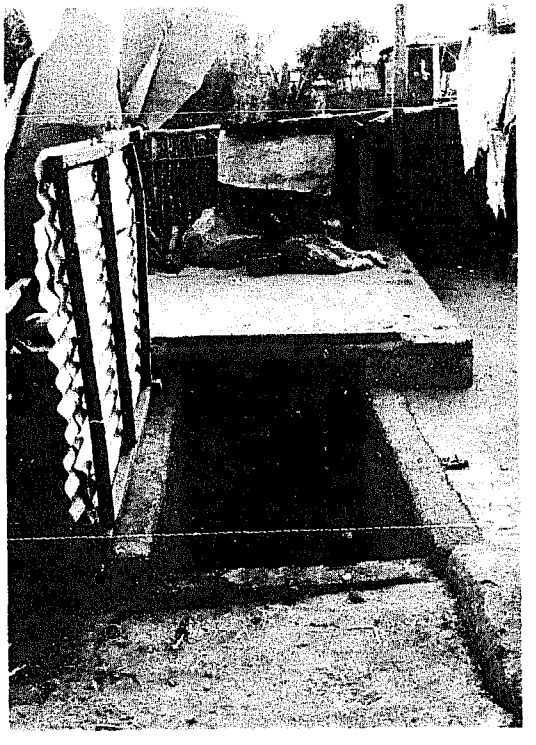


**FIGURE XII. EXTENSION AND ADDITIONS ARE MADE TO THE HOUSES**



Cement blocks are purchased when money is available

A shelter of this type is often built as store and/or kitchen



An original solution: the occupant has built a cellar in the compound for storing

More families occupying aided self-help-built houses have invested in improvements than those occupying contractor-built houses.

Families that participated in the aided self-help programme appear to have carried out extensions and improvements by using the training given by the programme during the construction of the original house. The rest of the aided self-help participants declare that they would be able to improve and extend the house without assistance. Most of the other families received some kind of assistance when carrying out improvements on the house.

In all, 12 families have made improvements, and one family has carried out improvements and extensions to the house. Most of the other families would like to improve and extend their houses, but many of them feel hampered by point 3 of the contract, and also insecure due to the fact that they do not possess a copy of the contract.

Applications for improvements and extensions are approved by the Director of the Population Census and Welfare Section, if such changes correspond to the original suggested design. However, some occupants have never received a reply to their applications. They declare that the procedure is uncertain and time-consuming. The Director of the Population and Census Welfare Section agrees that the resources of the Municipality are too limited to give proper attention to the project and the applicants. He is also considering the need for a new contract to replace the current one which he feels to be unsatisfactory, especially in respect of the terms of tenure. He thought that he should perhaps await a new contract before considering individual applications.

Up to now it has been difficult to carry out even the most necessary maintenance of the external systems (see figure XIII).

The sewerage system depends on regular maintenance, but so far this has been carried out only once (reinforcing blocked sections of the piping and removing sludge from the pits in the percolation field) and that only after a complete overflow of sewage liquids into the houses and the area was threatened.

During the discussions it was noted that most of the occupants were aware of the need for maintenance and, in principle, were prepared to participate actively in the maintenance work, but they felt that point 3 of the contract was a hindrance.

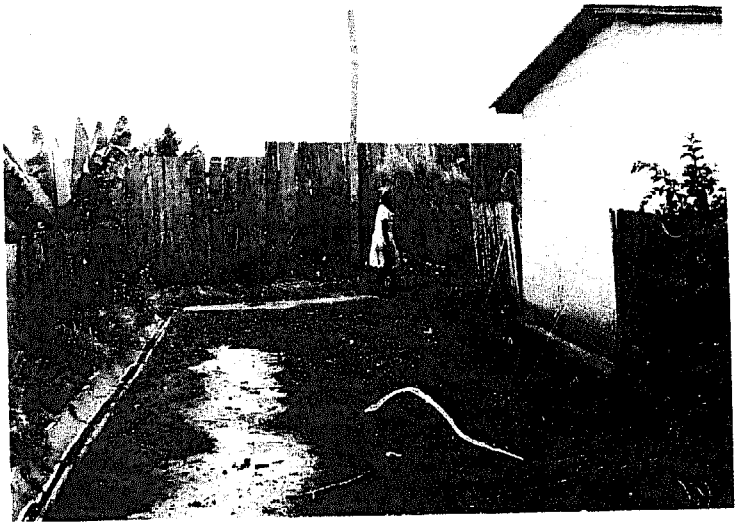
Costs

There is no follow-up analysis and breakdown of the costs of producing the project. For this reason, costs have been mainly derived from an original bill of quantities and from estimates, or inferred from other indirect information.

The following must therefore be considered as a tentative tabulation of costs based on available information and on assumptions:

FIGURE XIII. THE AREA IS BADLY IN NEED OF MAINTENANCE

Drainage is blocked



Ponds are formed by liquids leaking from the sewerage system

Muddy walkways

| | | Ethiopian dollars |
|---|---|---|
| 1. | Costs derived from the original bill of quantities: | |
| | (a) 12 B2 aided self-help houses, including additional works | 18,732 |
| | (b) 68 B2 houses, including additional works | 159,052 |
| | (c) 11 C2 houses, including additional works | 44,880 |
| | (d) Site works and pre-planning, excluding all works outside the housing site (cost of excavation works estimated) | 57,000 |
| | (e) External sewerage system, including percolation field | 22,870 |
| | (f) External water supply system | 24,350 |
| 2. | Estimate given by ESIBT engineer: | |
| | External electricity supply system | 7,500 |
| 3. | Costs assumed by ECA, March 1968, for all administration and design costs except for water supply and electricity supply systems | 55,666 |
| | Total | 390,050 |

It will be noted that the total costs for the project as given by the "Statement of costs for the Kolfe pilot housing", prepared by ESIBT ($E. 379,692), is lower than that given in this study. It may be assumed that the difference is due to ESIBT giving administration costs at 10 per cent overhead, and ECA giving the costs for design, owner administration, management and general expenditures at 18.4 per cent.

Since it is impossible to gain any clear picture on ESIBT's statement of costs, the only way to calculate a reliable cost picture is to reconstruct the costs on the basis of those obtained directly. For this purpose it is assumed that:

1. The original priced bill of quantities does not include costs for design administration;

2. The rough estimate given for the existing external electricity supply system is acceptable and should be included in the tabulation of costs:

3. Costs for design, owner administration, management and general expenditures, shown as 18.4 per cent in the ECA information sheet, should be added to all costs given in the original priced bill of quantities.

The price of a single housing unit is calculated as follows: Cost of the structure plus all costs for assembling and servicing the land, divided by the total area of the plots and multiplied by the plot size (117 $m^2$ for the B2 house; 192 $m^2$ for the C2 house). Thus, the price for one unit of each type of house would be:

| | B2 Aided Self-help | B2 Rented | C2 Contractor-built |
|---|---|---|---|
| | (Ethiopian dollars) | | |
| Building | 1,561 | 2,339 | 4,080 |
| Land assembly and service | 1,140 | 1,140 | 1,870 |
| Design, owner administration, management and general expenditures, water and electricity supply | 437 | 580 | 997 |
| Total | 3,138 | 4,059 | 6,947 |

## EVALUATION

### Town planning and master planning aspects

The programme for the pilot project states that "there is a lack of statistics to provide the basis for the proper assessment for the actual housing condition in the country. Nevertheless, the essence of the housing problem is well known...".

However, it is clear that the relevance of the project, as a model for the solution of the housing problem in relation to urban development, is negligible because of the lack of statistics, background information and a clear urban development policy for Addis Ababa.

The project has indiscriminately assumed and implemented peripheral rehousing. Considering the existing employment, commercial and residential structure of the town, it would be interesting to investigate how peripheral rehousing of the Kolfe type would affect the infrastructural development. Such investigation is, however, outside the means and scope of this study and would require all the work and research necessary to formulate a policy for the entire urban development of Addis Ababa.

Feedback on the subject indicates elementary consequences which could have been foreseen: rise in the cost and time of commuting and generally decreased intensity of movement to external interest areas, due to the predominating location of place of employment in the town, and to the general commercial dependence of Addis Ababa on the Central Market.

### Community aspects

One clear answer given by the project refers to the possibility of providing housing communities with a minimum of self-contained (autonomous) technical services. Here, the reference is particularly to the "aqua privy" sewerage system which apparently works properly if given the necessary maintenance.

The area is apparently attractive to the occupants, to visitors and to people in neighbouring areas.

One interesting detail is that the system of walkways, provided by the site layout for the area, has been complemented by a system of walkways through the individual compounds. Neighbours have agreed to open the gates between the compounds to extend the pattern of movement in the area. This testifies to trust and good relations among neighbours. On the other hand, the occupants of the houses along the perimeter feel unsafe against outsiders. Not much importance is given to internal privacy and security, but privacy and security from external areas are accorded high priority. This aspect should be given due consideration in future planning of housing communities. However, it must be kept in mind that these factors may derive from exceptionally good social relations determined by the size of the Kolfe community.

One problem was the difficulty of placing the traditional ceremonial tent so that it would be in view of all the houses (see figure XIV). Apparently all the occupants consider this to be a serious drawback. For this reason, the tent must be kept in mind when planning new housing projects.

## The B2 house

The B2 house can accommodate families ranging in size from two to nine persons. In general, the families use the house as suggested by the plan layout. However, it is felt that the house is too small, especially for the larger families, though the possibility of expanding it has not been utilized by more than three families.

The need for more space derives from three factors: inadequate storage; the wish of the parents for privacy; and the inadequacy of the original structure to accommodate large families.

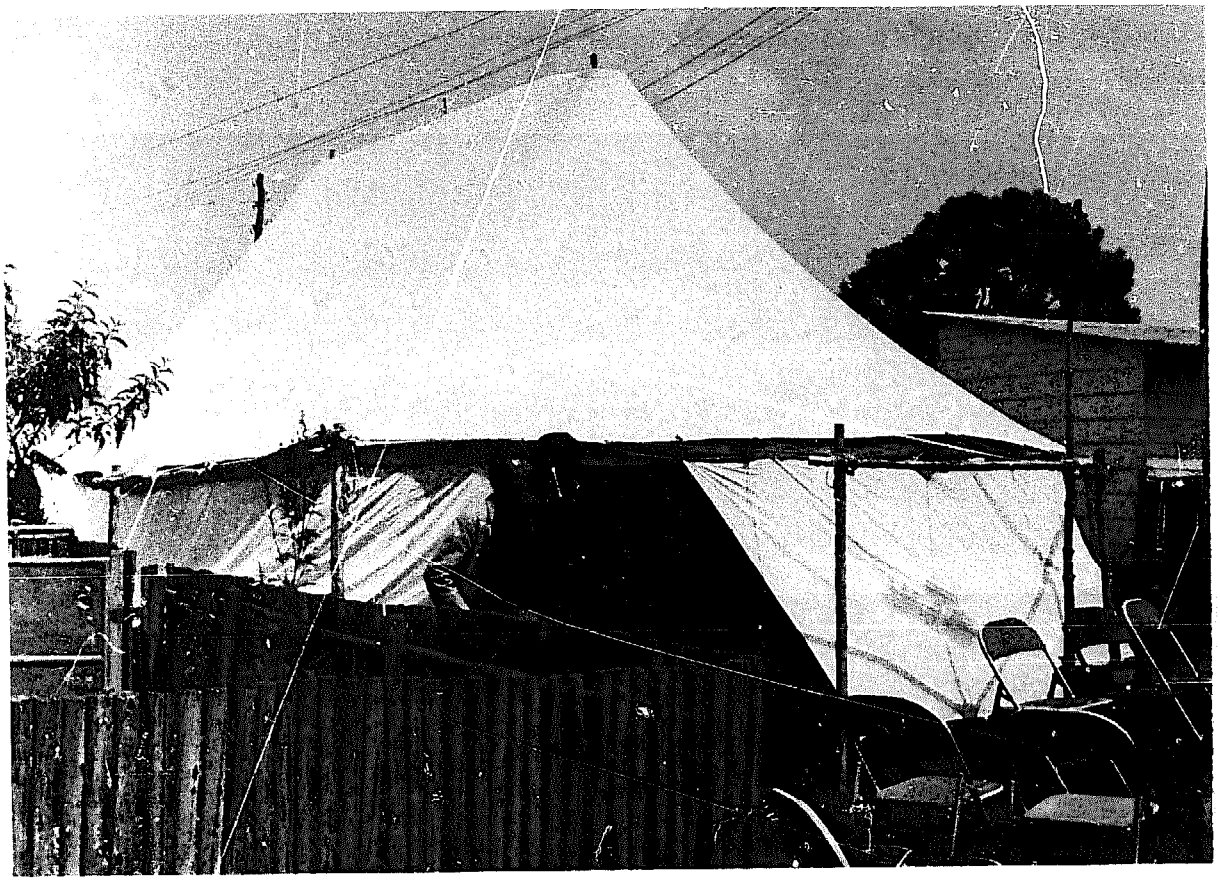
The need for additional storage is clearly documented, especially in connexion with food preparation, household purchasing habits and the use of firewood.

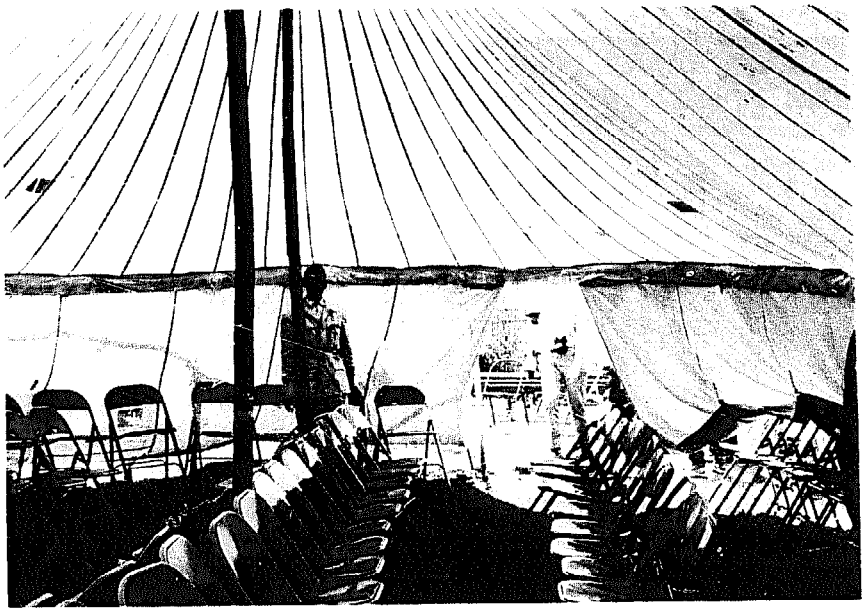
Currently, nearly all the floor space of the already small kitchen is being taken up by large pieces of household equipment, especially cans. The lavatory is often used for storage purposes. Sometimes there are so many items stored in the lavatory that it is practically impossible to use the shower. The designer's intentions concerning the furnishing of the kitchen are not understood by the occupants (see figure XV).

If shelves were provided as indicated by the layout, then at least the smaller pieces of kitchen equipment could be stored satisfactorily, although the large pieces, which are very heavy, would still take up a considerable portion of the floor space (see figure XVI). Nevertheless, shelves would be more suitable for the kitchen.

Furniture used at present consists of larger tables, and cabinets which are often placed in front of the injera oven, making access to the oven difficult. A storeroom should be built in the compound. It could, in principle, be similar to those that are currently being built.

FIGURE XIV. THE CEREMONIAL TENT PLAYS AN IMPORTANT PART IN COMMUNAL ACTIVITIES





Inside the tent

FIGURE XV. LAYOUT OF THE KITCHEN IN A B2 HOUSE

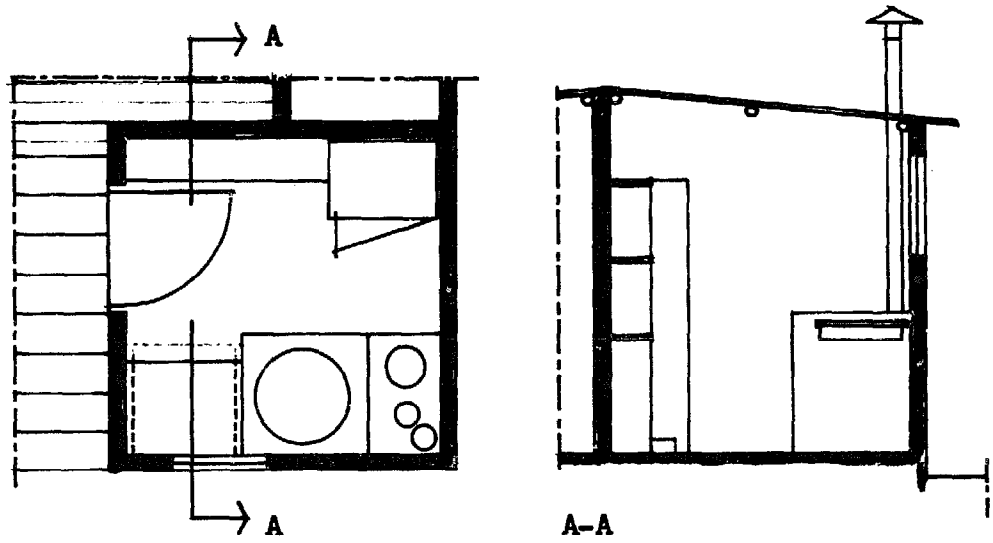
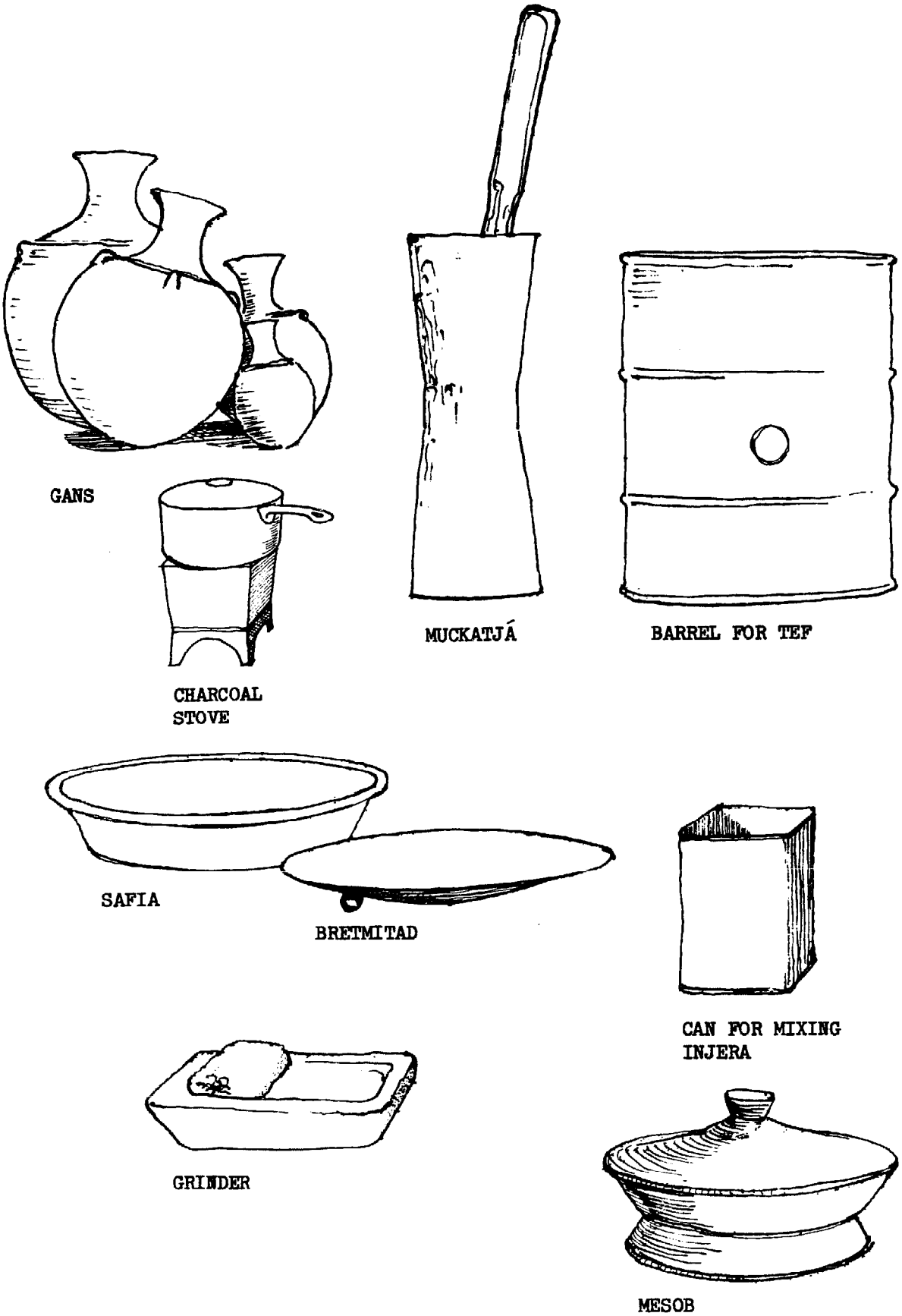


FIGURE XVI. SOME OF THE TYPICAL UTENSILS TO BE FOUND IN AN ETHIOPIAN HOME



However, it could be constructed with a more permanent technique. This would release the expensive space in the house at a lower cost (see figure XVII; compare with present layout in figure VIII).

The desire for privacy and status seems to be the motive behind the wish of even small families - comparatively comfortably housed - to achieve functional separation of space. The wish to separate the children's and the parents' sleeping space can be assumed from the desire of all families with children for additional bedrooms. Currently, only a very small number of parents achieve privacy by separating children through the use of the house's two compartments. From this, it would seem that status regulates the use of the two compartments. Sleeping is generally confined to the inner compartment while the entrance compartment serves for living and dining.

It has been found that two- and three-person families have two and three bed places respectively. This figure is much the same for the larger families. This is the result of the space separation and of the shape of the sleeping compartment, which allows for the use of not more than two or three beds of the usual type and for a maximum of four beds if one is a smaller size (185 cm x 85 cm). Assuming that families of more than three persons have several small children, who would not require more than one bed place, it seems reasonable to assume that, for families larger than five persons, the need for additional space would be acute.

Additional bed space may be provided either by adding rooms or by rearranging the two compartments. It should be possible to put an additional bed in the sleeping compartment if the existing partition wall was moved slightly and some space added to the inner compartment (see figure XVIII).

There is more space in the entrance compartment, so this issue seems for the time being to be feasible. However, this solution gives no consideration to privacy and would still not satisfy the needs of a very large family since some of the space in the room must be left for wardrobes and other furniture.

It is the custom, at funeral ceremonies, for the deceased to receive friends' and relatives' last greetings inside the house. The body is then put into the coffin, and the funeral procession begins. Owing to the design of the house entrance, the coffin cannot go through the door, but has to be taken out through the windows. This is a source of general complaint, based on deeply rooted social conventions. Custom demands that a dead person should always start upon his last journey through the entrance of his own house. Arranging for a new entrance would seem to be the best solution. However, this cannot be done on the basis of the present house plan. This is certainly a matter of great importance for future designs of new house types.

The kitchen

The kitchen is, in principle, too small, if all food-preparing activities are expected to take place in it. However, because it connects directly with the verandah, no real difficulty is experienced by the occupants. The utility verandah is not only a good complement to the kitchen but is very valuable for the many activities, such as washing, brewing tella, etc., that are carried out on it.

FIGURE XVII. SUGGESTED LAYOUT OF A STOREROOM FOR THE B2 HOUSE

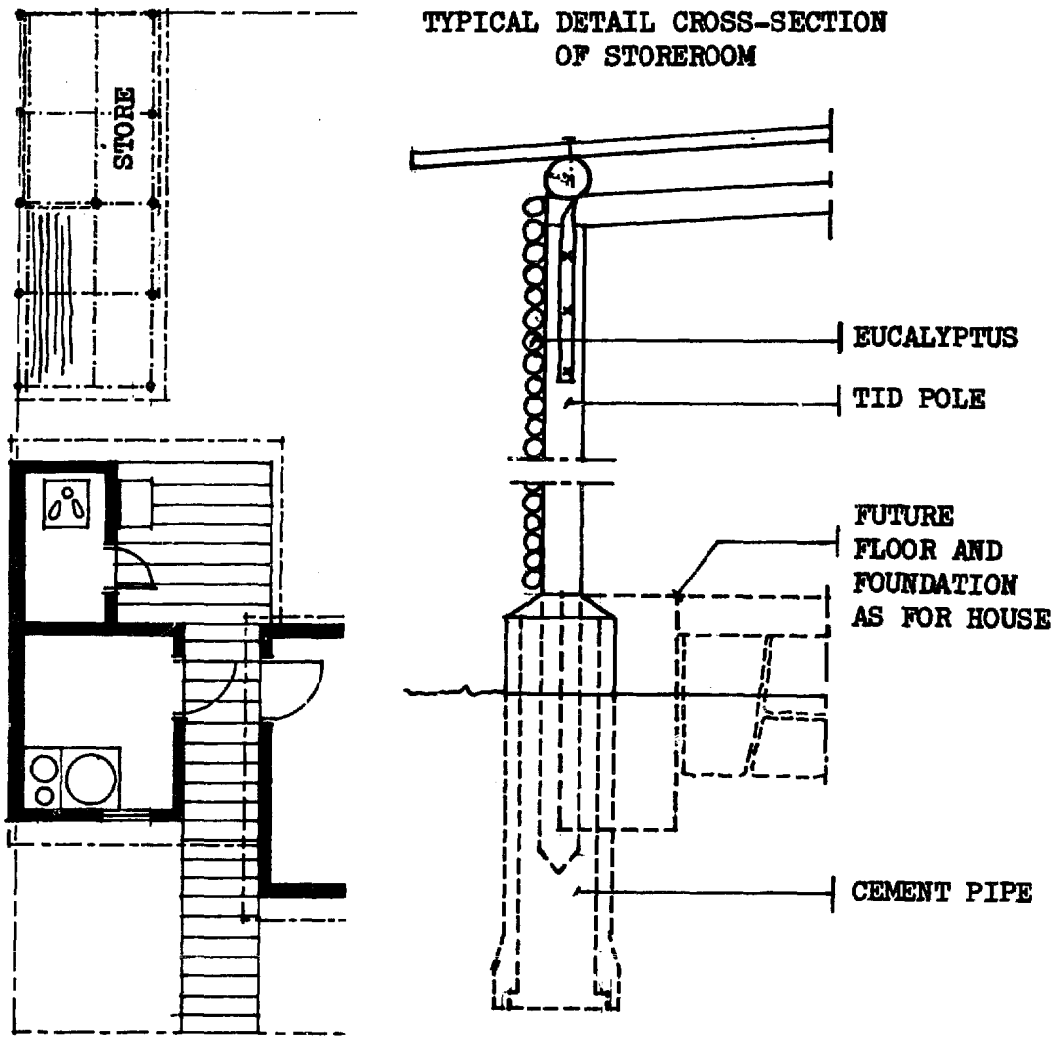
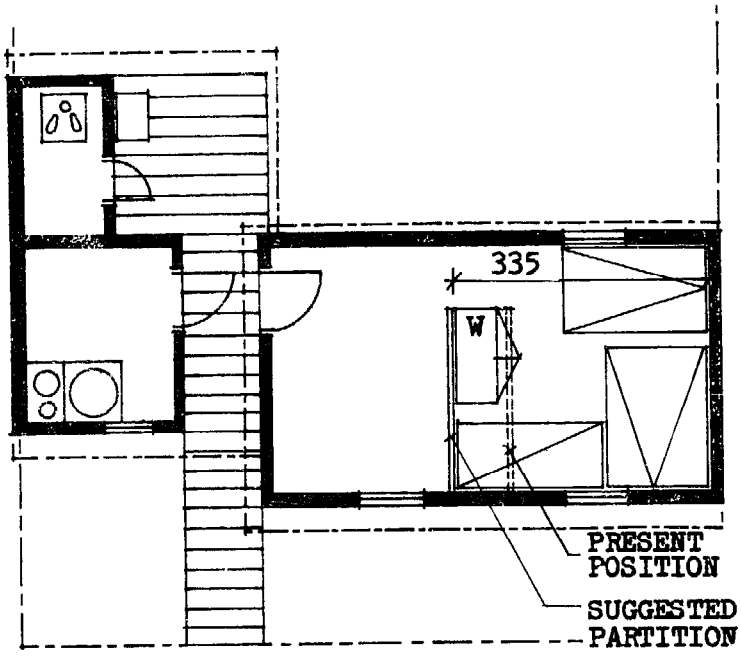


FIGURE XVIII. PROPOSED CHANGE IN THE POSITION OF THE PARTITION WALL



The oven takes up a large share of the floor space in the kitchen. This is particularly regrettable since, as it is now placed, it cannot work properly. It was observed that the proper functioning of the oven depends on the use of only one fireplace and it was assumed that a defective damper or a blocked chimney might be the reason for this. All the dampers seemed to be defective.

It would be worth while to devote more attention in new projects to the development of low-cost components like the oven. Many families prepare their food on movable charcoal fireplaces. This would seem to be a simpler solution than the clumsy fixed oven, since no real problems arise from the use of this very flexible oven, which is also used for heating. The use should have been accepted and one incorporated into the design of the house.

The thermal performance of the house is, at present, very poor. The subject seems to have been completely ignored when the house was designed. During very cold nights when the charcoal heater in the house goes out, the temperature indoors drops nearly to that out of doors. At least, the retardation of heat loss is a problem worthy of attention. In view of the current economic conditions, it seems futile to suggest technically adequate measures. Improvement has resulted from the measures applied individually by the occupants (such as the provision of plastic mat flooring, softboard ceilings, glass windows, wall plastering, etc.). As it is now, these measures appear to be the only ones available to the occupants.

## The C2 house

In the C2 house, the need to store the numerous and large pieces of Ethiopian household equipment is also given high priority. Every family keeps one of the bedrooms for storage. Much expensive space is lost in this way since the equipment is placed around the perimeter of the room. In this case, as for the B2 house, a store room built with cheaper materials and a low-cost technique would allow the valuable bedroom space to be used for its proper purpose (see figure XIX and compare with the present layout in figure XI).

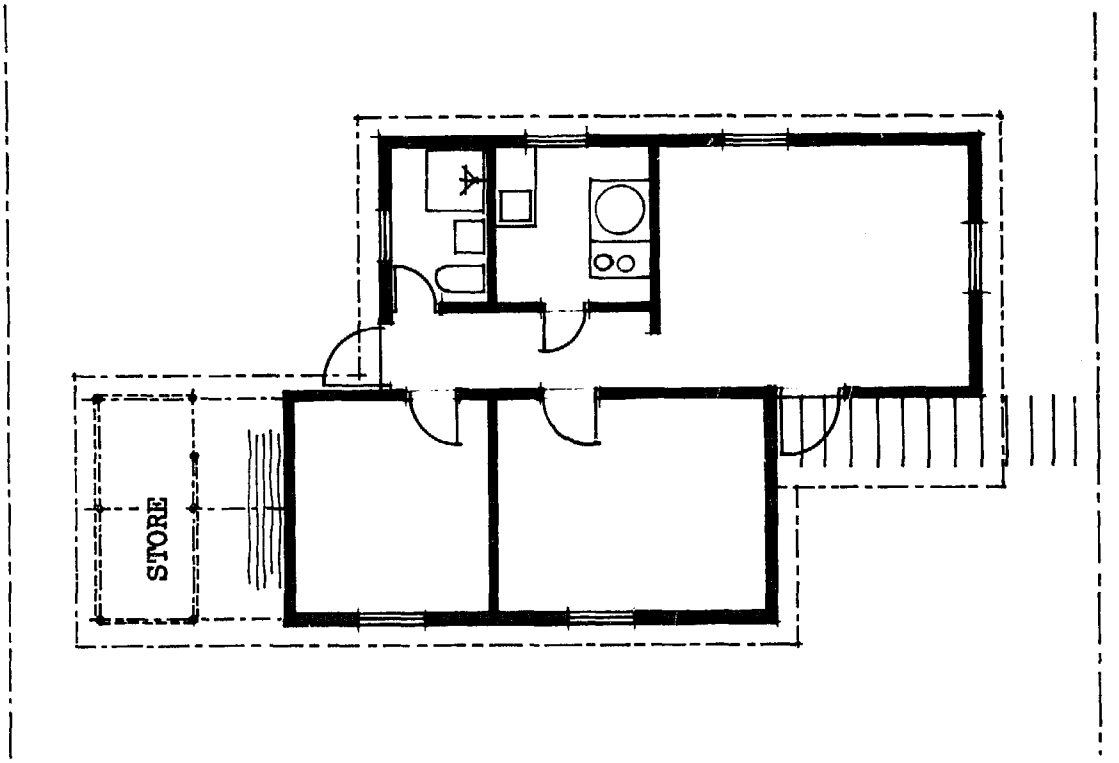
Because of this use of the second bedroom for storage, space is relatively abundant in the other rooms. As for the B2 house, the C2 families separate their sleeping and living space.

One major shortcoming can be seen on the external walls; water seeps through and makes big patches of moisture on the inner walls. This could be avoided if the outside of the house was plastered.

Currently, the large size of the plot makes for low densities and the limited extension possibilities succeeded in keeping them low.

The comparison between family income and the large size of the plot (which could be used for subsistence gardening) and the high standard of the sewerage system shows a certain imbalance. The scarce resources available for the development of technical systems should be utilized to the fullest extent, and, in this connexion, it seems reasonable to suggest that the standards of accommodation should be based on the realities of the prevailing situation rather than on any subjective opinions of "standards of decency".

FIGURE XIX. SUGGESTED LAYOUT OF A STOREROOM FOR THE C2 HOUSE



## Economic aspects

Undoubtedly, most of the occupants experienced a rise in their standard of living, both technical and social, when they moved to Kolfe at a rent not much higher than that for their previous, generally very poor, accommodation. This situation, however, derives from the Municipality's current method of determining rents and amortization. According to a statement of the Director of the Population Census and Welfare Section, the charges are based only on the costs covered by the Ethiopian Government's contribution. Thus, at present, amortization and rent do not correspond to those assumed in the programme but make up only 44 per cent, 30 per cent, and 29 per cent of the assumed costs of the B2 aided self-help house, the B2 rented house and the C2 rented house, respectively. On the other hand, if the assumed costs were applied in Kolfe, the occupants of the B2 aided self-help houses would pay between 28.7 and 7.8 per cent of their incomes for accommodation. Occupants of the B2 rented houses would pay between 127.5 and 23.1 per cent and the occupants of the C2 rented houses between 69.6 and 37 per cent (see figure XX). (The fact that occupants of the B2 aided self-help houses would still have to pay low rents should be seen as a result of comparatively high income, although their cost for accommodation is the lowest.) No general correlation can be found between income and type of accommodation. This could have been anticipated since the procedure for selecting families was a very weak one, based on a casual cross-section of a family economic situation, in time, which has varied. It is not uncommon for the occupants' incomes to fluctuate. As can be seen in figure XXI, if a correlation existed, all occupants would have to pay much more than 20 per cent of their incomes for the C2 rented house, and only two families would be able to pay the assumed economic rent for the B2 house. Nineteen families could afford the economic amortization of the B2 aided self-help house.

The housing standards suggested by the pilot project seem to fit very poorly the economic target set up by the programme, since the current situation implies (on the basis of the programme assumptions) a high level of subsidies, while the charges would imply an unreasonable economic burden for most of the families. However, if the assumed economic rent and repayments are broken down (figure XXI) into costs for structure (S), individual sanitation (IS) and developed and serviced land (DSL), it can be seen that the possibilities of acquiring some kind of organized physical environment, on economic terms, will exist for most occupants on the basis of the income/rent relationship (see figure XXII).

Thus, also, the Kolfe housing pilot project seems to underline the already known relevance of site and service schemes and aided self-help as being the level at which strategies for urban control should be sought. The economic assumptions of the programme must, however, be taken for what they are: naive conventions from western praxis, since they completely ignore local financial possibilities, formal or informal. The keen exploration of these possibilities should be one of the most important tasks to be undertaken, especially the exploration of popular organizations like the Edder and Equbs, which are rooted in Ethiopian traditions, and are familiar devices, even for poor people, by which accommodations are, at present, acquired and improved.

The fact that most families in Kolfe have difficulty in paying rent, in spite of the present low income/rent ratio, indicates that an investigation should be undertaken of the relationship between income and subsistence.

FIGURE XX. KOLFE HOUSING PILOT PROJECT: RENTS, ACTUAL AND CALCULATED

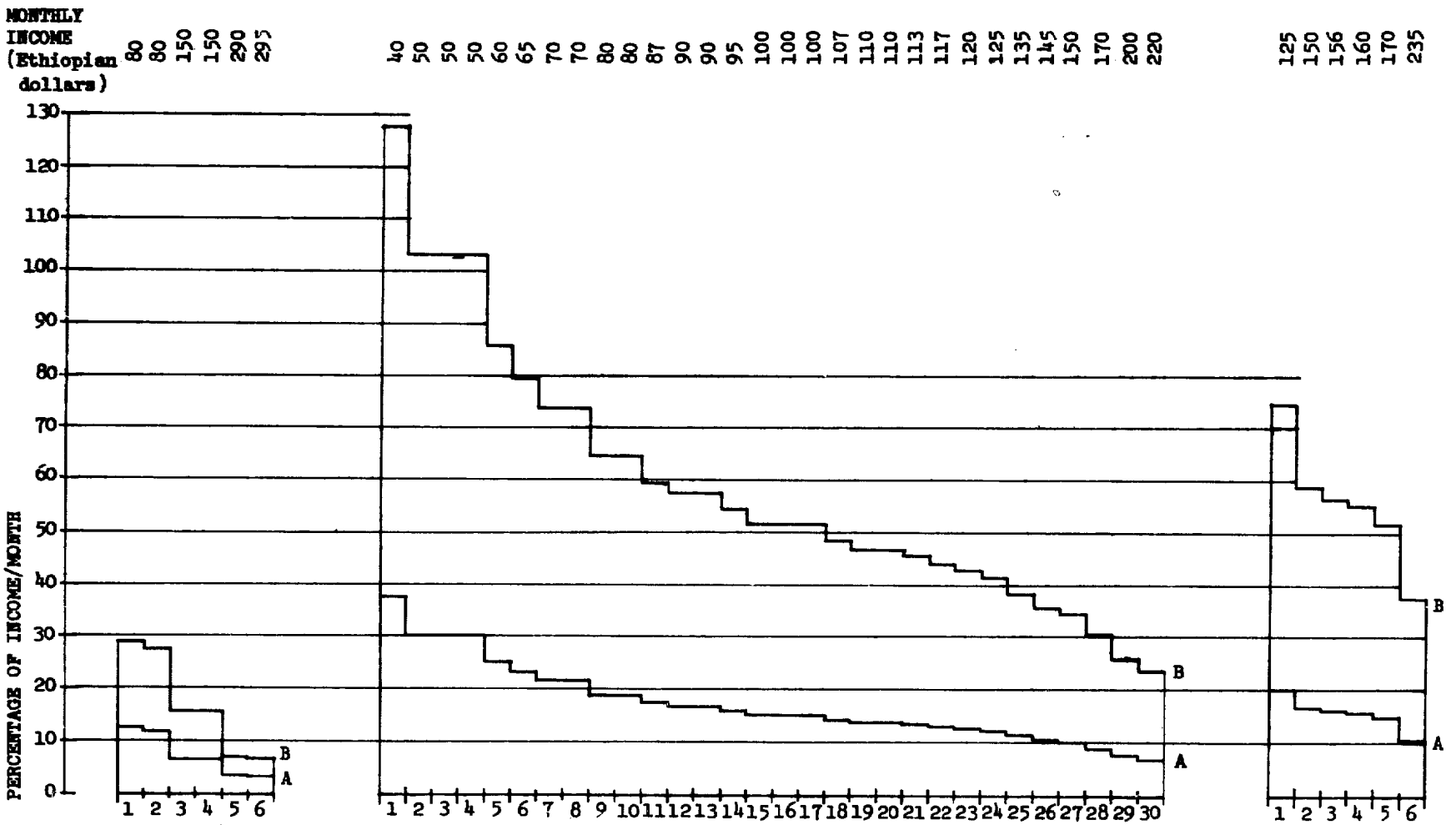
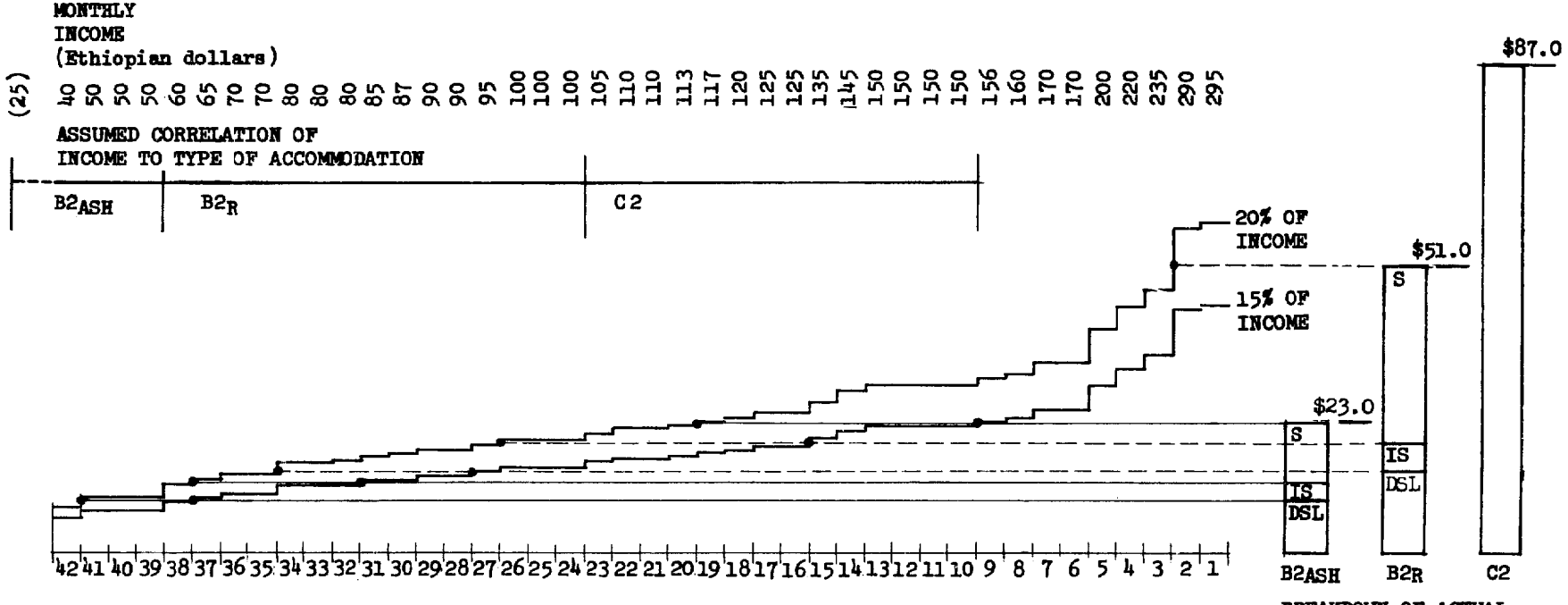


FIGURE XXI. KOLFE HOUSING PILOT PROJECT: BREAKDOWN OF ACTUAL MONTHLY COSTS OF ACCOMMODATION




$B2_{ASH}$ = B2 house (aided self-help)

$B2_R$ = B2 house (rented)

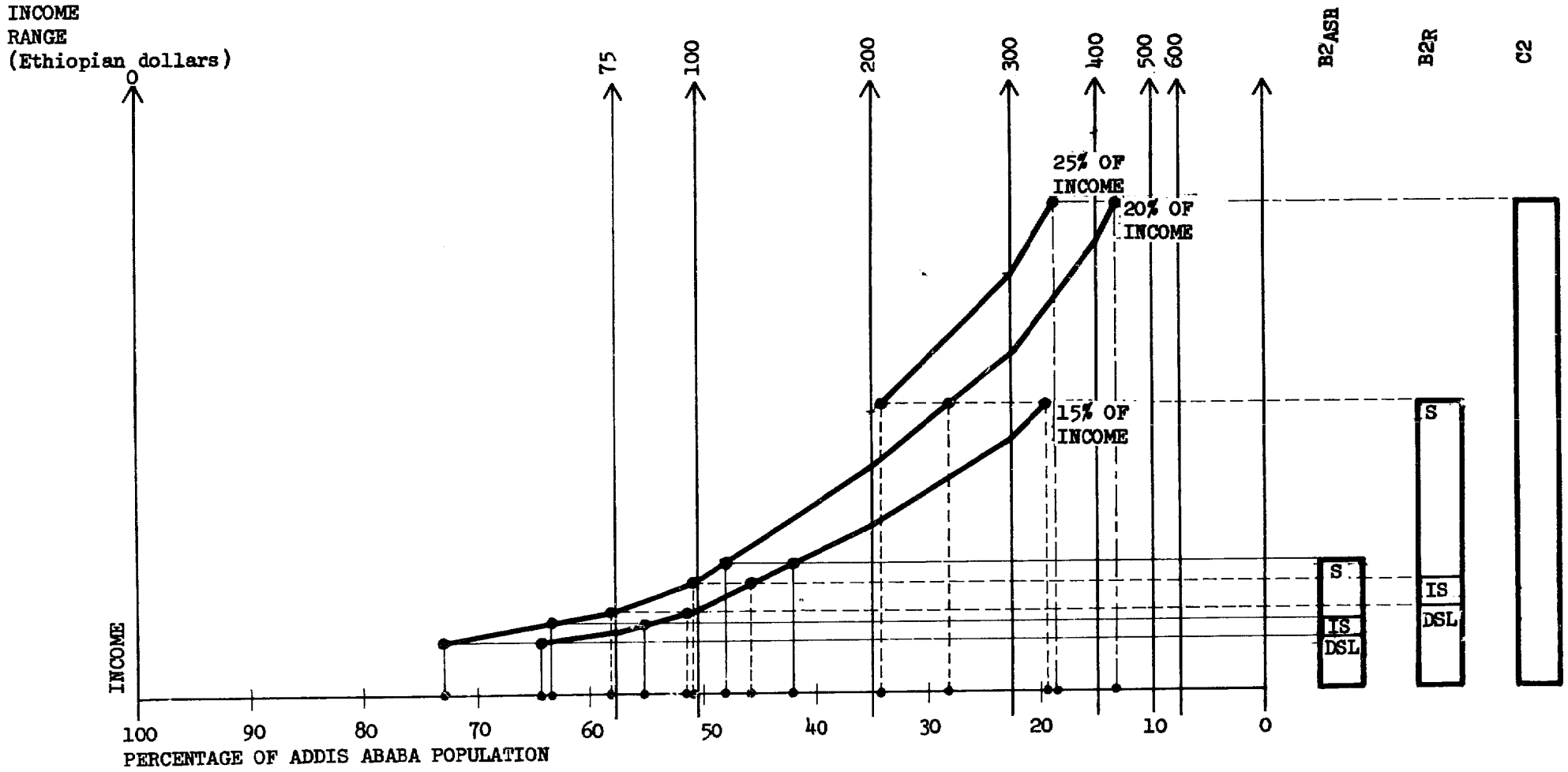
C2 = C2 house

S = cost of structure

IS = cost of individual sanitation

DSL = cost of developed and serviced land

FIGURE XXII. PERCENTAGE OF POPULATION OF ADDIS ABABA THAT COULD ACQUIRE HOUSING AT AN ASSUMED ECONOMIC COST




$B2_{ASH}$ = B2 house (aided self-help)

$B2_R$ = B2 house (rented)

C2 = C2 house

S = cost of structure

IS = cost of individual sanitation

DSL = cost of developed and serviced land

Most Kolfe families live on the borderline of subsistence. The decision on how much individual families can afford for housing must depend on the individual family's priorities of needs (this is also a reason for site and service schemes and aided self-help).

Thus, housing standards should relate only to such over-all considerations as land use, public health, etc. and should leave as much as possible to individual choice.

## Organizational and administrative aspects

The present administration of the project is not much help to the development of the area since it interferes with the use of local resources and, at the same time, is unable to carry out the work itself. The plan contains a built-in provision for the future improvement of the area and extensions to the houses, which it is intended to implement; it allows phased improvements and extensions to be made on the basis of individual capacity.

The work is not carried out partly because of the terms of tenure stipulated by the contract, partly because the occupants have not received the tenure documents, and partly because there is much uncertainty about what a future contract might stipulate. Some occupants believe that all the tenants of the three types of houses will become purchaser-owners, though others are sceptical.

Another reason the work is not carried out is that the Municipality has very limited resources to invest in the maintenance of the area. At present, the Municipality is doubtful that it can support its activities in Kolfe and it may have to depend on contractors. This, of course, would be costly and it is unlikely that the Municipality would be able to carry the burden.

A third reason is the administrative delay that takes place before proposals for improvements are approved.

At least some basic maintenance of the sewerage system, of the surface water drains and of the walkways must be carried out since these systems are rapidly deteriorating in the absence of regular maintenance.

Up to now, apart from the letter written by the occupants concerning wanted improvements and alterations of the houses, needs for maintenance have been reported to the Municipality by persons not connected with the pilot project. Regular inspection, of at least the common technical service systems, is indispensable if rapid deterioration of the area is to be avoided.

The occupants cannot rely on external organizations and institutions for financing improvements and extensions. Up to now, extensions and improvements have been carried out on the basis of own savings or Equb lotteries.

No possibility of getting loans for this purpose is visualized; the occupants are not able to give guarantees for loans and, too, loans for this purpose, especially small, short-term loans, are not available.

Only a very limited number of families see own savings as the means of financing future improvements and extensions. As it is now, savings are kept at home. Most families see the only financial possibilities in Equb lotteries. The Equb has the advantage that people will engage in the saving schemes but, at the same time, it gives very limited possibilities. Often a person, or several in need of a larger sum, engage in an Equb with people whom they know very well. An agreed sum is paid by every member and the whole amount is given to a winner who then continues to pay, but is precluded from further winning. This continues until all members have got back the total amount contributed. Sometimes, the person who suggested the Equb is given priority, i.e., he is the first winner.

Equb are often short-term saving schemes in which the sum of all the members' contributions is available for one person at a time over the stipulated period. This is contrary to the rational use of capital, by which, for example, discounts and lower transportation costs could be obtained by purchasing building materials in larger quantities.

Further investigation would show that people rely on Equb to acquire houses and improve housing conditions. Their savings could be better utilized, however, if they were directed through organizations like the Edder, which could also allocate savings for the common good. This is particularly relevant for extensions of housing and the maintenance of common technical systems. The reality of today is, however, the Equb lotteries are the only means visualized by most Kolfe occupants to finance improvements and extensions. These financing mechanisms should be taken into account before planning the development of the areas.

One possibility is to advise people to organize Equb on the basis of expected costs and to make improvements and extensions possible also for families who can contribute only small amounts.

Most of the families are unable to fulfil the expectation of the Municipality that they should carry out full extension of the house according to initial plans without delay. It must be kept in mind that the layout of the house allows it to be expanded one room at a time. The possibility of achieving lower costs (in order to keep the cycle of the Equb within a reasonable time period) through step-by-step improvements should be considered, so that part-permanent construction can be temporarily built.

## The Edder

Membership in the local Edder does influence and determine the course of relations to an appreciable extent. This form of credit union, based on informal agreement and mutual trust, tends to reinforce "active social contact". Every householder belongs to the local Edder; 100 per cent of the responses indicated that relations were "extremely good".

The Ethiopian authorities have a generally positive attitude towards the involvement of popular organizations in community development and productive activities. This attitude should primarily be interpreted as recognition that publi public resources are inadequate and it could lead to positive results in Kolfe, where a good community spirit is supported by relatively good know-how and labour resources.

Most occupants are relatively qualified workers. There are two or three good building technicians (one of them is a teacher at the Ethio-Swedish Institute's school for building foremen). Some of the participants in the aided self-help scheme have apparently also gained experience in building which could be made use of. There are also several clerks, accountants and book-keepers. The Edder, itself, provides a familiar framework for organizing and financing activities.

The maintenance of the basic technical systems requires little know-how and little money. The tools and materials could be purchased by the Edder, and the money could be raised by occupants subscription, as is now done for other purposes.

It seems clear that the community could raise some of the financial, manpower and organizational resources which the Municipality is lacking. On this premise, it seems possible to develop and maintain the area.

SENEGAL

# AN EXPERIMENT IN SELF-HELP HOUSING AT DAKAR

By Jacques Dreyfus, Scientific Adviser, Centre d'études et de recherche d'aménagements urbains, Puteaux, France

CONTENTS



## BACKGROUND

The experiment was first considered in May 1954, when a number of trade union officials who had visited several self-help settlements in France decided on their return to launch a similar experiment at Dakar. The project itself was started in August 1955. Twenty-nine months later, in January 1958, the last houses were completed, on schedule.

One outstanding feature of the experiment was that the "plan of campaign", devised by Mr. Durand, a psychologist and head of the Mission for the Study of Labour Problems in French West Africa, was followed through, with no changes, until the work was completed. It was mainly Mr. Durand's deep understanding of African psychology that made this possible.

After several informative meetings aimed at explaining the proposed experiment and stimulating interest, there followed a period of initiation. Several evenings during the week and every week-end for three months, the prospective self-helpers, who numbered at that time about 150, in teams of 10, followed training courses given by instructors form the Rapid Professional Training Centre. These courses broadly corresponded to the pre-training period of the ordinary Rapid Professional Training course. The self-helpers thus learned to use ordinary bricklayer's tools such as the plumb-line, the plumb-level, the trowel, pliers, clamp, etc. They also learned a number of other simple operations, such as how to assemble blocks, to do plastering, and peg out a building. At the end of the course, the most diligent were able to assemble a wall of blocks almost as well as professional builders. One office worker, for instance, was so skilful with his hands that one forgot that his ordinary occupation was non-manual. The prospective self-helpers came from relatively varied backgrounds (see Additional information, below) and included office workers, manual workers, builders and other skilled workers.

The aim of this period of initiation was twofold:

1. To teach the prospective self-helpers resourcefulness on the project site;

2. To test their perseverance and application, so that the less keen could be eliminated.

The next phase was the construction of a demonstration house. This was intended to complete the selection process and at the same time give the self-helpers a real idea of the type of house which had been proposed to them at the end of the first phase, so that they could decide if it was really what they wanted and needed. In fact, the only change which was made to the original plan following the construction of the demonstration house, was a considerable improvement to the lay-out of the utility rooms.

It was understood from the beginning that the demonstration house, which the self-helpers themselves would build in relays, would not belong to them. It was to be given to a department of the Federal Administration, which needed accommodation for its staff and had agreed to advance the money required for purchasing materials. As the demonstration house was to be built by the self-helpers on a voluntary basis, its construction was a particularly valuable test of perseverance.

It was thought wiser not to decide on the final membership of the society until the construction of the demonstration house was fairly advanced. This made it possible to keep only the 90 self-helpers who had proved to be most hardworking during the initiation period and on the project site, and to convince the organization which we had to ask to finance the operation (in this case the Caisse centrale de la France d'Outre-Mer) that the experiment was in earnest. Of course, at first the self-help scheme was treated with almost complete scepticism, in both the African and European circles of Dakar.

It had been thought better to limit the number of self-helpers to 70 at first in order not to appear too ambitious, although we knew that with 90 we could make better use of the collective material, and would be in a better position financially, since the terms of the loan were for repayment over two years and the total duration of the experiment would be substantially the same with 90 self-helpers as with 70. However, with the approval of the loan organization, the membership of the society was increased to 90 shortly after work on the site itself began.

The next stage was the settlement of all administrative questions such as the definite formation of the society, the allocation of land (from the outset the authorities had agreed that it should be free of charge), and the loan application.

At the same time, the site was being carefully prepared from the technical point of view: collective material - concrete mixer, press (for blocks) - and individual tools were purchased; instruction cards were made ready.

These cards, which were given out to the self-helpers, represented a real construction course for non-professionals and might be called "the art of building a house with a pile of stones and a few bags of cement". The construction of the house was divided into 28 simple operations, each of which was described on a separate card. Thus, the self-helpers needed to bring to the site only those cards which they needed at a particular stage of the construction of their house.

The society was divided into teams of 10. Each team therefore had to construct five two-house units, on the understanding that one unit would not be started until the preceding one had been completed. The principle of the team is basic to the self-help system. It is better for 10 self-helpers to work together on one building than for each to work separately on 10 buildings.

The teams worked at staggered intervals of two weeks, so that each team could have the cement mixer or the press when it needed them and all the cement for the foundations could be poured in a single operation. The estimated time for constructing a unit was five months, which meant that, leaving a safety margin of 15 days for possible delays, we could plan on the basis of nine teams of 10, i.e., the 90 which we kept.

It was decided that the first house would be built on the site of the demonstration house by the team that earned the least marks during the initiation period. This house would then be used as a storage shed and would be reclaimed by the team concerned at the end of the experiment.

For all practical purposes, the construction of the storage shed began in August 1955, and that of the first unit of team No. 1 at the beginning of September. The average time taken to build the units was the estimated five months, although the tempo of work slowed down slightly towards the end. Such a slackening off is only to be expected when a sustained effort is required for more than two years.

All the construction work of the buildings proper, including the making of the blocks, was done by the self-helpers themselves, apart from carpentry, plumbing and electrical work which was done by professionals. The land for the individual plots was given to the society completely ready for use.

One of the typically African features of the experiment was the contribution made by the petits frères, living on the wages of the self-helpers who were heads of families. Provision was made for this contribution in the rules of procedure of the society.

Throughout the preparatory period, a valuable contribution was made to the society by its technical advisers and by the instructors from the Rapid Professional Training Centre at Dakar, who were afterwards sent in relays throughout the period of work on the site to help teams in difficulty, for instance, when a house had been initially badly installed, or when a wall had been built crooked. The role of the instructors became less and less necessary as the experiment progressed. The average quality of the buildings was only slightly inferior to that of community housing built at the same time by commercial firms.

## ADDITIONAL INFORMATION

The additional detailed information given here supplements the general account given above. Certain major points, for instance those relating to technical assistance, will be dealt with only in the second part, the aim of which is to define the scope of the experiment and to estimate the possibilities of expanding it.

## The men

The 90 self-helpers included:

Twenty-seven office workers of all grades from office chief to junior clerk;

Twenty-seven professional builders including bricklayers, concrete-pourers, metal-workers, carpenters and plumbers;

Thirty-seven other workers.

When the society was started, the earnings of the most disadvantaged self-helper were 8,000 francs, i.e., the wages of a low-skilled worker who is relatively well paid by his employer. The highest earnings were up to 50,000 francs per month. A quarter of the self-helpers earned more than 20,000 francs per month.

Broadly speaking, it may be said that the participants all belonged to the privileged section of the Dakar population, since they had a steady income. The average earnings were relatively high since more than half of the self-helpers (56 per cent) belonged to the Administration or to bodies of an administrative nature; 36 per cent were business employees, and 8 per cent were self-employed artisans. 1/ This was the same segment of the population sought after, at the time of the experiment, by the local building society, which was responsible for most community housing operations. However, considerably more of the building society's clients were in the higher-income brackets. The building society also included many members of the African middle class, who alone were able to contemplate a four-room or at least a three-room house.

The 26 professional builders obviously made a valuable contribution. They were distributed in groups of two and four per team of 10.

## The houses

Each self-helper, who provided the same number of man-hours and undertook the same financial obligations as his companions, was entitled to a similar house. In other words, the 90 houses built at Dakar were identical.

Each house contained three main rooms with a total surface area of 40 square metres, and an inside and outside patio with a total surface area of 11 square metres.

The walls were made of hollow compressed cement blocks plastered on both sides, the roof from asbestos cement, the floor from cement with a coloured covering; the main rooms had a false insulated ceiling made from light wood-fibre panels. The bathroom contained a shower and a seatless flush toilet and the kitchen a sink with a concrete slab.

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1/ Civil servants in Dakar were rather better paid than business employees, which is the opposite of the situation in highly industrialized market economy countries.

To all intents and purposes, each house was of the exact same size as the three-room houses built by the Dakar Building Society which, as has been seen, most of the self-helpers could not have afforded. The quality of construction was also more or less comparable. There were, however, two significant differences: at first, in order to reduce individual contributions and include the poorer employees, we did not intend either to install electrical wiring or to build fences. However, both these facilities were covered, thanks to an additional loan obtained after the society had been launched. This loan also made it possible to install internal communicating doors and outside glass windows, neither of which were generally included in community housing built at the same time. It should be noted that glass windows are almost indispensable in Dakar where, during the trade winds (from December to May), the minimum daily temperatures are particularly high (the average monthly minima are 16° and 17° C in January and February), and, in addition, winds frequently exceeding 5 metres per second. The project as a whole comprised 45 two-dwelling units. The roads were asphalted and there was a sewerage system.

From the technical point of view, it should be noted that single prefabricated concrete components were used for the door and window frames. The process had been developed to facilitate the construction of the walls. The experiment completely fulfilled expectations.

## Administrative organization

The society was of the "co-operative" type (more exactly "a limited co-operative company with variable capital and members"). The rules were based on the standard rules of urban self-help systems which were adapted to local conditions, in consultation with the loan organization, which was directly involved in the administrative organization of the society.

Each subscriber had to sign an agreement to "provide free of charge any contributions in kind (that is to say in work) and in cash defined by the rules", failing which he would be banned from the society and forfeit the right to indemnities for contributions previously provided in kind.

The Board of Directors was initially composed of six members, which meant that some teams were not represented. This led to some difficulties during the early months of the operation. A change in the rules made it possible to form a new Board with a representative from each team.

The rules stressed first and foremost the joint responsibility of the members of a team to honour commitments undertaken.

The preamble stated: "Each team must be considered as an indissoluble unit and all members are jointly responsible for the progress of work".

The rules made specific provision for the work of the petits frères, with the exception that in no case should the number of hours worked by each self-helper be lower than 1,000 out of an estimated total of 2,000, this being the number of man-hours considered necessary to build one house. However, this number was given only as a rough guide, the main condition being that each team should complete its work in the time specified: five months for the first unit, 10 months for the second etc. The time limits were counted from the day when the team in

question had been authorized to begin work (i.e., two weeks after the first for team No. 2, four weeks after the first for team No. 3, etc.). Any departure from the initial time-table was punishable by penalties which might result in being dropped from the team.

A meeting was held in the middle of every week to discuss problems which had already been settled or which were still unsolved.

The self-helpers were insured, through the society, against any risks encountered on the site.

## Financial balance-sheet

The land was given to the society free of charge. At the time work was started on the construction site, each plot of land, averaging 200 square metres, was worth approximately 100,000 francs, which represented almost exclusively the cost of preparing the ground. 2/

The cost of constructing the dwelling units themselves had been estimated at 230,000 francs a unit, made up as follows:

| | Francs |
|---|---|
| Materials, including wood for the concrete shuttering and carpentry, but not including sanitary fixtures | 160,000 |
| Carpentry work | 13,000 |
| Plumbing | 20,000 |
| Water mains and sewers | 25,000 |
| Unforeseen and miscellaneous expenses | 12,000 |
| | 230,000 |

The original estimates were adhered to in practice; some increases in the cost of materials were offset by reductions in the costs of plumbing and carpentry.

The initial loan was calculated on the basis of 90 times 230,000 francs, or 20,700,000 francs. An additional loan was obtained of 90 times 50,000 francs, or 4,500,000 francs, for fences, electrical wiring, inside doors and external glass windows. The same house built by a commercial enterprise would have cost approximately 550,000 francs, or approximately 50 million francs for 90 houses, as against 25 million. The saving of 50 per cent corresponds exactly to the saving estimated at the outset. At Dakar, in fact, at the time of the experiment, the

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2/ The figures refer to French African Community francs. In any event, the figures given here have no significance except in relation to each other.

cost of building carried out by a commercial enterprise, was made up as follows:

| | Percentage |
|---|---|
| Materials | 40 |
| Labour | 20 |
| General and miscellaneous expenses, profit of the construction company | 40 |

In the present case, moreover, the plumbing, electrical wiring, carpentry, and water connexions were not carried out by the self-helpers themselves.

The Dakar experiment therefore made it possible to construct 90 dwelling units at a cost to public funds of:

25 million francs, in the form of a repayable loan, representing the cost f construction;

9 million francs, representing the value of the prepared ground given to the self-helpers.

In the case of construction by a commercial enterprise, similarly financed, a loan of 50 million would have been required.

The figures given do not, however, take into account the technical assistance given to the society. The problem of technical assistance is discussed in detail below.

It is evident, moreover, that the loan granted to the self-helpers only represented an expenditure for the community in so far as its terms were more favourable than the current market terms, which was indeed the case: the interest was 3 per cent and it was repayable over 10 years. Clearly, too, the value of the land given to the self-helpers could have been considered as a repayable advance.

The counterpart contribution from each self-helper from the time the society was set up until the full repayment of the loan was as follows:

(a) At the time the society was established, each self-helper contributed the sum of 10,000 francs, representing the cost of his shares.

The total of these payments covered the cost of purchasing materials, both for the group as a whole and for individuals;

(b) From the time his team started work on the construction site, each self-helper paid a monthly contribution of 500 francs, mainly to cover the general expenses of the society: insurance, watchmen; and to provide a small reserve;

(c) From the time the self-helper had a finished house assigned to him, ready for occupancy, the contribution was increased to 2,500 francs, a sum which was fixed as representing approximately the monthly repayment on the loan.

The monthly contributions were in fact paid to the society by the teams, the members of a team being jointly financially responsible. In other words, the monthly contributions paid by a team, which amounted to 5,000 francs when work started on the construction site, were automatically increased by 4,000 francs each time a house of two dwelling units was completed by the team.

To avoid penalizing the more active teams for the delays of other teams, the dates of the completion of dwelling units, for the calculation of contributions, were the theoretical dates determined according to the maximum length of time for the construction of a house laid down by the rules of the society, namely, five months.

(d) After the completion of the work, each self-helper had to pay a monthly rent, calculated in such a way as to cover the costs of repaying the loan, after the deduction of the assets of the society or the completion of the work.

Excluding the assets of the society on the completion of the work, which may be estimated at approximatel 1.5 million francs, the monthly repayment, which would have been 2,250 francs on a loan of 230,000 francs, must have been 2,740 francs on a loan of 280,000 francs.

These figures should be compared to the average rents in Dakar in 1955-1957:

| | Francs |
|---|---|
| Room, 9 square metres in size, in a wooden building, without water or sanitation | 1,000 |
| Dwelling units of the Cap-Vert Building Society, with water and sanitation, rent: | |
| 1-room studio | 3,000 |
| 2-room so-called "collective" dwelling unit | 3,250 |
| 2-room dwelling in a two-dwelling unit | 5,000 |
| 3-room dwelling in a two-dwelling unit | 7,000 |

The last type of house is similar to that built by the self-helpers. It is therefore obvious that a rent of approximately 2,500 francs a month for a house which one would own in 10 years represented a comparatively modest sum, considering the level of prices in Dakar. 3/

3/ Obviously, the figures given should in no way be used as a basis for any judgement on the financial policy of the Cap-Vert Building Society. Some people might be tempted to say, for instance, that the rents fixed by the Society were too high. The level of rents, in fact, was to a large extent determined by the terms of loans granted to the Society by public bodies, terms which were considerably less favourable than those granted to the self-helpers. Furthermore, the level of rents must take into account the costs of administration and upkeep.

## SCOPE AND POSSIBILITIES OF EXTENDING THE EXPERIMENT

The most obvious advantage of the experiment described here was that it provided 90 families with houses they could hardly have acquired unless they had themselves done the physical construction work. It might also be said that the Dakar experiment increased the number of dwelling units available locally by 90, with the help of a comparatively modest amount of financial assistance from the state authorities. In the circumstances, one is led to speculate on the possibilities of extending the self-help system. In conclusion, it will be shown that a self-help experiment like that carried out at Dakar cannot be judged from the strictly functional point of view, in other words, only in relation to the problem of housing.

### The existence of an untapped potential labour force the main requirement for the self-help system

The self-help system is unquestionably somewhat inhuman in that it compels the participants to devote all their leisure time for several years to the construction of their houses. It has been seen that, at the outset, the Dakar project was inspired by similar French experiments, which left a strong impression on public opinion precisely, it must be said again, because of their inhuman character. The Dakar experiment, however, was less inhuman because the self-helpers were assisted by their petits frères. This merely reflected the existence in Senegal during the 1950s of a considerable potential of untapped labour. That is still true of Senegal in 1967 and, in general, of all the developing countries. In other words, it might be said that the self-help system is a simple method of putting that potential labour force to good use. From this point of view, it was illogical to seek to impose on the Dakar self-helpers a minimum of personal loans in kind, as the rules of the society stipulated. Such a clause was included mainly for certain reasons, to be explained later, put forward by the technical advisers concnected with the experiment.

Whatever the solution to that particular problem, however, we may conclude that a priori the possibilities of extending the self-help system are almost unlimited in the developing countries. Nevertheless, two obstacles might be encountered: the financial capacities of the community or of the individuals concerned, and the possibilities of providing the necessary technical assistance.

### Financial limitations

Although it reduced the cost of construction by about one half of that of commercial housing, the Dakar experiment nevertheless imposed a considerable burden on the State authorities, which had not only to lend the necessary sum to finance the remaining 50 per cent but also to provide the ground free of charge and already prepared. The loan itself was granted on terms particularly favourable to the self-helpers. On the other hand, it would have been difficult for the majority of the participants to bear a greater financial burden, although they belonged to a comparatively privileged section of the population. One might therefore be tempted to say that this is a vicious circle from which there is no way out and that, consequently, even in the developing countries, however favourable the labour conditions, the possibilities of extending the self-help system are comparatively limited.

Fortunately, the matter is somewhat more complex. It would be wrong to attempt to define, once and for all, a single type of low-cost housing, the price of which would consequently be fixed and invariable. The type of housing constructed at Dakar was in practice dictated by a whole series of circumstances, including the political environment of the period before decolonization, the fact that the technical advisers were Europeans, and the social and professional standing of the participants. It may be assumed that less favoured self-helpers would have had more modest ambitions and that in an independent country technical advisers of the same nationality and the same race as the self-helpers would have been able to encourage them in that direction. We must stress the flexibility of the self-help system in the choice of techniques and materials; it might be possible to use less durable materials, or at least materials which require a certain amount of care or precautions on the part of the occupants. However, such materials could not be used in houses rented and constructed by a commercial enterprise (the enterprise is subject to contractual obligations and a 10-year guarantee, especially in countries where the French legal system prevails, and the landlord must protect himself against the risks of dilapidation).

At Dakar, many self-helpers have added extensions of a lesser quality than that of their actual house but better than that of the shanty-towns which flourish in the traditional African town. At the same time, others, who are more fortunate, have made serious efforts to improve the appearance of the original building. This shows clearly that a great variety of solutions are possible when individuals use their initiative without sociological restraints. Hence, experiments in different places should be compared.

## Is technical assistance necessary?

Similar comments can be made on the subject of technical assistance. In other words, the Dakar experiment must be interpreted in its context, and comparison with similar experiments in different contexts would be particularly useful.

This does not refer to the technical assistance provided by the instructors from the Rapid Professional Training Centre, which the author is prepared to regard as essential, but which should never give rise to serious difficulties, under whatever circumstances, as soon as public opinion becomes aware of the problem and of the benefits to be derived from its solution. That should in no way be taken as a reflection on the professional qualifications and the mental and moral calibre of the European instructors who took part in the Dakar experiment.

The total paid to them for their time spent on the self-help site was 400,000 francs, while the total value of the work carried out over the same period was 50 million francs (in commercial terms), so that the expenditure involved was less than 1 per cent of the total cost. To be strictly accurate, the social welfare payments, which in this case were considerable, should also be taken into account. Nevertheless, it should be pointed out that it was only the situation existing in Dakar which led to the use of European training: from the financial point of view this is a luxury.

The interpretation of the Dakar experiment is less straightforward where the technical advisers are concerned. Their services were provided entirely free of charge, but the aid received was nevertheless worth a good deal in economic

terms. If the self-help system becomes more widespread, it is unlikely to be able to continue on the basis of cost-free participation, and the problem should therefore be discussed in detail.

Aid was in fact provided on three levels:

(a) Psychological assistance, aimed at encouraging the self-helpers to persevere on the way which they had freely chosen;

(b) Administrative assistance: the launching and completion of the operation required a certain amount of organization, which was a considerable burden on the participants;

(c) Technical assistance, whose importance is clear from the account given above.

The basic aims of the technical advisers were themselves fairly complex:

Part of their task was to show that housing units could be built more cheaply than by the usual procedure of resorting to contractors. From this standpoint, the experiment was intended to confirm the theories advanced by the two advisers strictly within the framework of their professional activity;

Above all, they wished to show, in the climate of Dakar just before decolonization, that cordial relations between Europeans and Africans were possible and that Africans, contrary to the belief or pretended belief of some, were capable of sustained effort if there was enough at stake. This, incidentally, was the reason for the clause in the project regulations requiring personal effort from each participant.

All this obviously meant that the experiment could not afford to fail. For this reason the amount of assistance provided was perhaps excessive and the approach was over-cautious.

Be that as it may, the three forms of assistance differed in their practical implications. Technical assistance was unquestionably necessary, but if the experiment had been carried further, the effort initially made would not have had to be repeated; in any case, it could be paid for as well as provided free of charge. The psychological assistance, on the other hand, would have been just as essential for a second experiment. The same was true of the administrative help which was aimed at overcoming the difficulties experienced by a traditional African group during the changeover to a type of organization inspired by that which has developed in the industrialized countries. In short, real collective discipline had to be created, a task which was not always easy.

For this reason, it would seem that a self-help experiment on any appreciable scale cannot be contemplated without training to a level considerably higher than that provided by the professional training instructors. Here again, however, only a comparison of different experiments will give a clear indication of how important the nature of that training is.

It is worth remarking that in Dakar itself the experiment described here was prolonged spontaneously, and with a very slight degree of participation by outside advisers. Ten years after the launching of this second experiment, 10 houses out of the 100 planned remained to be built. This confirms that the self-help system cannot operate on its own, but seems also to show that the external assistance requirements are not necessarily high. Two facts about the first experiment described here lead to a similar conclusion:

The part played by the technical advisers, which was very important when work began, subsequently became negligible;

On the other hand - a point which was not worth noting for itself but is significant in relation to the problem now being discussed - the fencing for which the self-helpers obtained a supplementary loan without a previous technical study in depth was in practice never erected according to specifications.

In any case, the author feels that serious consideration of the problem of assistance is essential if the self-help system is to make any real progress.

The self-help system is not simply a means of housing a poor population

In fact, faced by the difficulties, particularly of training, which the self-help system raises, one might be tempted to doubt its utility. Financially, the advantages are unquestioned, since in Dakar construction costs were cut by about 50 per cent. However, there are other systems which lead to almost the same result; subcontracting, which became widespread in Dakar during the same period, affords savings which, though less, are still considerable. For the construction of community housing in a climatic and economic environment like that of Dakar, replacement of the contractor by the jobbing builder eliminates all the expense involved in recourse to the complex system of the organized firm.

In fact, the author's impression of the Dakar experiment was that the self-help system was much more than a means of housing a poor population.

However that may be, an accurate assessment of the experiment must include the following points:

From the strictly financial standpoint, an additional advantage of the self-help system is that it practically eliminates subsequent maintenance expenses, since the participants themselves assume this responsibility;

The system as used at Dakar provided participants with the basic essentials which met the strictest standards of hygiene, but might not necessarily suit the needs of a polygamous or extended family. Many owner-occupiers were able, on their own, to add additional units of rougher construction or to make conversions, thus reaching an acceptable compromise between quality and living space, which would have been difficult without assistance;

"Do it yourself" building has become a regular occupation of the self-helpers, and many of them are never without a bag of cement in the house. This is important in the ex-colonial countries, where contact with a European population consisting mainly of professional and office staff has led to contempt for manual labour.

Finally, and probably most important, 10 years after the end of the building stage and several years after the self-helpers have paid off their financial obligations, their group as such remains alive and continues to function along the lines initially imposed on it by technical requirements. The team supervisors remain, and each of them acts in turn as host to the meetings, over tea, of the Management Committee. Material solidarity also remains. Going beyond the problems of housing pure and simple, the participants have sought, and are still seeking, to improve the living conditions of the community: trees have been planted, and a youth centre and a mosque are planned (although admittedly their construction seems slow). What is perhaps even more important, in at least one case the community spirit of the self-helpers has prevailed over traditions. When one member died, the society, after lengthy discussions with the customary beneficiaries and the payment of an indemnity to them, succeeded in ensuring that the house would remain the property of the deceased's children instead of becoming that of his wife's brother.

It might possibly be asked whether the fact that a family has housing corresponding to certain standards in the industrialized countries is really significant. A number of the self-help houses in Dakar are rented out, which makes it possible for those involved to feed a family with many petits frères. Although he was shocked when he first learned of this, the author now sees it as an unexpected, but nevertheless fortunate, consequence.

As far as the sociological consequences of the experiment are concerned, however, caution should be exercised in interpreting the observations made. Would the same results have been achieved with other social and professional categories of a lower degree of urbanization? In addition, the environment at Dakar allowed a number of Europeans and a hundred Africans to work together at a crucial moment in the history of Senegal. This made it possible to stress certain aspects of the experiment that ensured its success. What would happen today in a completely different sociological and political context?

## CONCLUSIONS

The conclusion to be drawn from these remarks is that the advantages of the self-help system can hardly be doubted. On the other hand, the steps necessary to extend it, particularly as regards the training required, are not easy to specify with certainty. Any chance of progress on this point probably lies in comparing similar experiments run in different sociological, cultural and political surroundings. The specific information on the Dakar experiment which the author has attempted to give as precisely as possible should make a useful contribution to such comparisons.

THE SUDAN

# REHOUSING OF SQUATTERS AT DEIM GILUDE, PORT SUDAN

By Hassan Yassin Bedawi and El Bedri Omer Elias

CONTENTS

## INTRODUCTION

Like most other developing countries, the Sudan is undergoing a gradual shift of its population from rural to urban areas. The Sudan is not yet highly urbanized when measured by European or even African standards, 1/ but the degree of urban growth so far reached in certain urban centres has been sufficient to bring about all the typical problems which follow rapid urban development. There is a need for more housing, there is a need for better housing, the cost of the socially acceptable house is beyond the means of substantial numbers of urban families, overcrowding and slums are quite common, and in recent years squatter settlements have sprung up on the fringes of some towns. Such problems are sharply felt in the larger urban centres because those centres have received the maximum share of economic and social development. For the young immigrant seeking employment, these large centres are found more attractive since they offer greater opportunities for employment and other amenities of life.

The steady growth of population in the major towns has resulted in adverse problems of housing shortage, overcrowding, slums, illegal settlements and squatting. Under these circumstances, the challenge lies in the ability of the authorities to bring about the administrative, technical and financial climate that will ensure a balanced distribution of resources and facilities and that will curb further deterioration of the environment. Until recently, the situation in the Sudan was unfavourable to the growth of healthy environments. That was partly due to the absence of adequate funds for housing and related facilities - which, in turn, stemmed from an insufficient understanding of the role of housing in the development plans - and partly to the absence of a central body in which the responsibility for housing and planning could be vested. New towns grew and developed around administrative, commercial or industrial centres, unguided by development plans and with only secondary provision for housing and related facilities. The outcome was, in most cases, the growth of squalid and unhealthy communities within the town centres and around the periphery.

Recently, a separate ministry has been established to deal with housing and environmental problems. It is a stated policy of the Ministry of Housing to give priority to the correction of the numerous mistakes inherited from the past (for instance, new housing communities without public facilities and services and the absence of control over the old communities which have grown haphazardly). The greatest part of the Ministry's effort is now being deliberately directed towards the improvement of existing communities through replanning, rehousing and the provision of essential facilities and services.

The present article describes a rehousing scheme undertaken by the Ministry of Housing in one of the major towns, Port Sudan. The scheme is ultimately intended

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1/ According to the first population census, 8.3 per cent of the total population of the Sudan were living in urban settlements by 1956. Current estimates of urban population range between 12 and 15 per cent. (The Sudan, Department of Statistics, First Population Census, 1955-56 (Khartoum)).

to affect some 60,000 squatters living in seven distinct districts (known as deims) 2/ around the town. So far, two of these deims (Deim Gilude and Deim Sallalab) have been cleared, and their 16,000 inhabitants rehoused, but the experience gained from them will be used in rehousing of the populations of the other deims. This article gives a brief description of the pilot project of Deim Gilude, which was started in January 1970 and completed in June 1970 and has successfully affected 5,800 squatters.

The main conclusions to be drawn from the pilot project of Deim Gilude support the views already put forward by John Turner and others concerned with Latin American housing: that new responsibilities will need to be assumed by both the public and the authorities, and that there is a vital need for housing agencies to come to terms with popular resources and efforts, if significant improvements of the housing and environmental conditions are to come about. 3/

## PORT SUDAN AND ITS DEIMS

The new town of Port Sudan, at the railway terminus and around the newly constructed docks, replaced the old town of Suakin as the only sea port of the country. The main outlines of the present town were laid down in the early interwar years. Port Sudan now ranks second to the three-towns capital of the country as a population centre (see map 1).

The site of the present town was traditionally occupied by Beja nomads who were involved in agriculture and animal grazing. After the establishment of the town, they continued to congregate on its periphery and some found employment as unskilled workers in the docks. They lived in dense, semi-rural settlements (or deims). In addition to these original settlers, the town drew more people from the surrounding Red Sea Hills and Tokar area. The process of immigration was speeded up by a series of dry years in the Red Sea area which encouraged the farmers to neglect their fields in favour of new chances for employment in the new town of Port Sudan. These new immigrants were also attracted by the deims as the latter provided cheap accommodation and proximity to places of work. The result was a rapid expansion of the deims and a haphazard growth of the town, particularly in the period after independence in 1956.

The population of Port Sudan grew from 47,000 in 1956 to 90,000 in 1965. 4/ Thus the population has almost doubled in only nine years. The 1970 estimate of the population of Port Sudan reached 120,000 inhabitants. It has been calculated that since independence the town has been growing at a gross annual rate of 8.2 per cent. Out of this, 2.4 per cent is accounted for by natural increase, which means that immigration alone is responsible for the other 5.8 per cent rate of annual growth.

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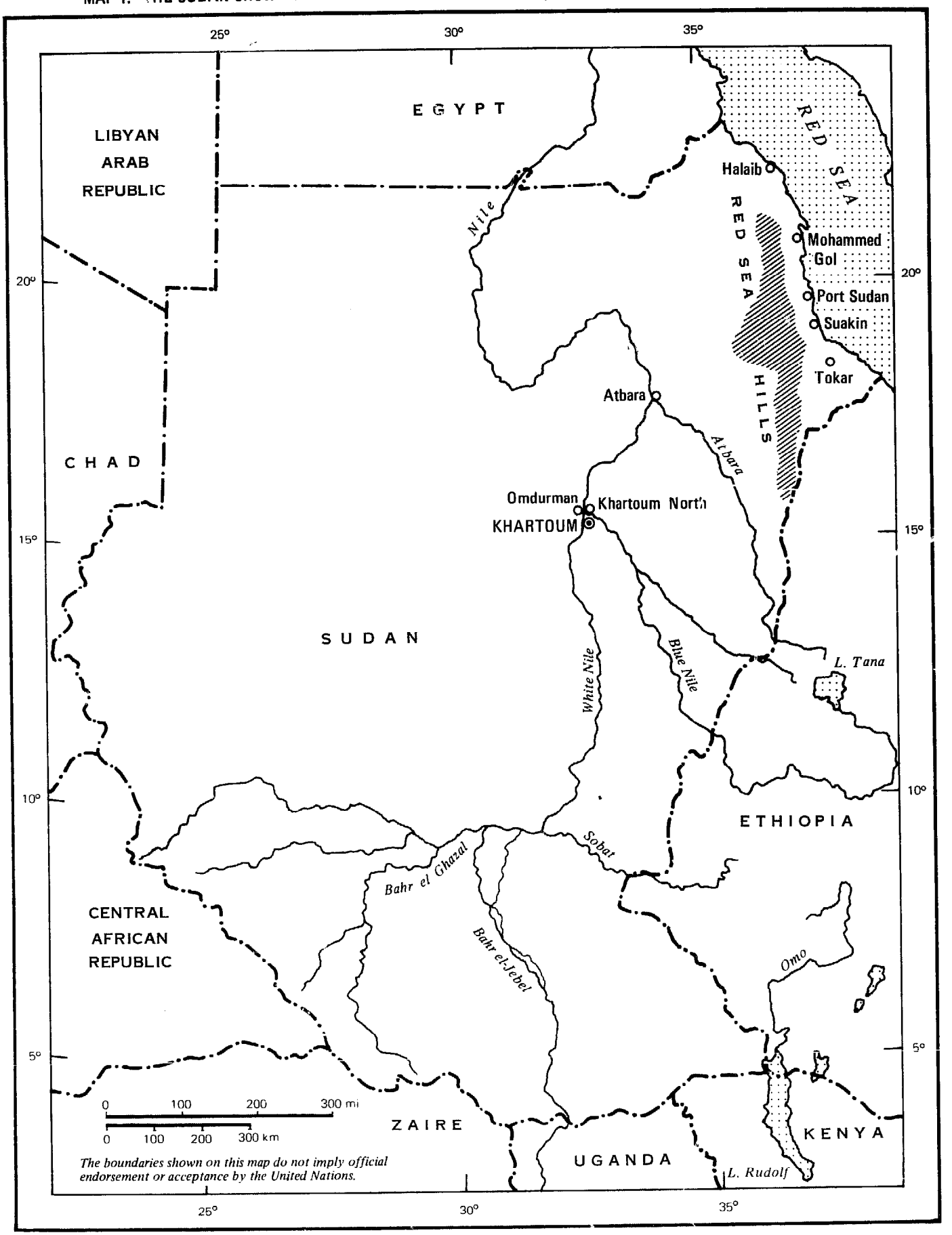
2/ Deim is a local term used to describe the traditional, overcrowded residential community.

3/ John Turner, "Dwelling resources in South America", Architectural Design (London), August 1963, pp. 360-393.

4/ The Sudan, Department of Statistics, Population and Housing Survey - Port Sudan, 1964/65 (Khartoum).

MAP 1. THE SUDAN SHOWING THE LOCATION OF PORT SUDAN, TOKAR AREA AND THE RED SEA HILLS




MAP NO. 2551 UNITED NATIONS
JUNE 1973

Overcrowding within the town centre and the high cost of building in relation to the incomes of the people, mostly low-paid workers, pushed more families to the deims. In addition to the original settlers and the new immigrants from the Red Sea Hills, the deims began to receive massive overspill from the main town itself. As the town grew and developed, the squatter areas were spreading out and were, moreover limiting the expansion of the town proper from almost all directions (see map 2).

This rapid uncontrolled growth aroused the interest of the authorities and by 1958 Doxiadis Associates were invited to advise on the master plan and the future development of the town. 5/ But the town grew beyond any anticipated rate and the outlines of the plan were broken long before the end of the plan period. The situation today is characterized by an urgent and haphazard growth of shanty-towns and illegal deims.

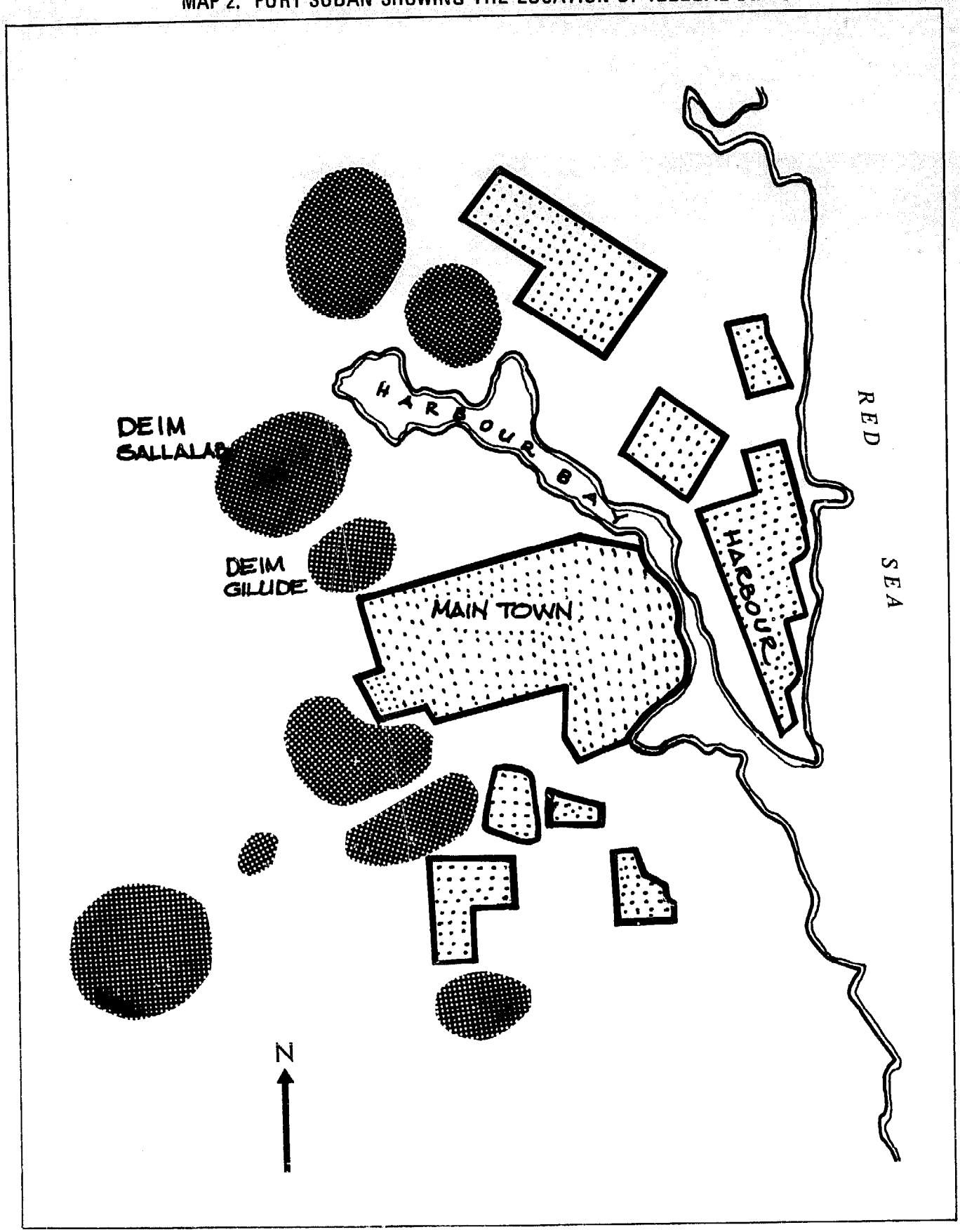
Some 60,000 inhabitants - about half the population of Port Sudan by 1970 - were living in temporary shacks comprising seven different deims in conditions of terrible overcrowding and lacking the most essential facilities and services. The average house in these communities consists of one room built of straw, tins, cardboard or used timber. The family of between four and 10 persons lives in this room lacking privacy and the means of getting rid of human excreta. The few small open areas around these shacks - which are in fact unplanned leftovers - were used as rubbish dumps and as such they became breeding grounds for mosquitoes, flies and other harmful insects. The whole environment of the deims was unhealthy, miserable and, moreover, a disturbance to the urban atmosphere of the town. It was natural that disease and social evils would develop and that the deims themselves would be regarded unfavourably by both the citizens and the authorities of the town.

The following table gives a statistical summary of the size of the populations in the deims of Port Sudan.

| Name of deim | Number of households | Number of persons |
|---|---|---|
| Deim Gilude | 1,984 | 5,800 |
| Deim Sallalab | 2,194 | 10,000 |
| Deim El Nur | 1,889 | 9,000 |
| Dar Es Salaam | 2,360 | 12,000 |
| Adrut Dippa | 600 | 3,000 |
| Umna | 3,200 | 15,000 |
| Hillat El Shareif | 587 | 2,800 |
| Total | 12,514 | 60,500 |

5/ Doxiadis Associates, "Port Sudan master plan", a document prepared for the Government of the Sudan (Athens, 1959).

MAP 2. PORT SUDAN SHOWING THE LOCATION OF ILLEGAL DEIMS

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## DEIM GILUDE

One of these deims, Deim Gilude, was chosen for the Pilot Rehousing Scheme.

Deim Gilude, to the north of Port Sudan, is the oldest and perhaps the poorest of all the deims. 6/ It illegally occupied land close to the railway station which had already been zoned for development of stores and warehouses.

A scheme drawn up by the local authority in 1963 was the last serious attempt to rehouse the squatters of Deim Gilude. The residents were allotted plots of land in a planned area west of the present Sallalab area and just outside the old town boundary. They were asked to move to the new site but very few actually did so. The inhabitants thought that the new site was too far from their places of work and that the new building would be expensive. Also, there was no assurance that the services and facilities they needed in the new scheme would be made available to them. Indeed, the town authority's decision to remove the deim to its new site aroused great indignation among the inhabitants who saw it as a device to deprive them of their land and give it to others.

The failure of the 1963 rehousing scheme underlines two general principles of vital significance in dealing with squatters' problems, and, indeed, with all types of rehousing problems.

The first principle is that no solution is likely to materialize without the consent and the active participation of the inhabitants involved. Official objectives, however noble they may be, can easily be misinterpreted, leading sometimes to deplorable results. The squatters and illegal settlers are usually conscious of their own problems, foremost among which is the feeling of urban suppression. Unless they are carefully and genuinely approached, and encouraged to solve their own problems, they are likely to resist any attempt at rehousing, and they usually have the organization for this kind of reaction.

The second principle to emerge is that if these solutions are to be effective, they must be based on a clear understanding of the needs and resources of the inhabitants involved. It would not be feasible to ask their consent and participation in solutions that are too remote from their felt needs and potentialities. Theoretical standards and abstract values have no place in solutions suitable for the masses of the urban poor. Solutions have to be practical, easily comprehended and easily followed. The time invested by the planners or the architect in knowing his clients is not wasted, for it is the only way he will be able to provide for their needs and aspirations and, above all, to discover human and material resources for the improvement of their environments. This is particularly so in developing countries like the Sudan where the housing and environmental problems are relatively new and where the basic information about the people and their desired environments is lacking. 7/

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6/ Hassan Y. Bedawi, "The growing deims of Port Sudan", a series of articles in Al Ayam Paper (Khartoum), May 1970.

7/ El Bedri O. Elias, "Space standards in low-cost housing with specific reference to urban areas of central Sudan", Ph. D. thesis, Edinburgh University, 1970.

These two principles considerably affected the philosophy, the method and the solution for the replanning of Deim Gilude early in 1970. There was very little information available from the town authorities about Deim Gilude and its people. The only information available was that the deim could be distinguished from the other deims by a higher rate of crime, unemployment, illness, social malaise and mental disturbance among its inhabitants. The need for a social and economic survey immediately became apparent. This was planned on a house-to-house basis to collect information about such aspects as sizes and types of families, age groups, employment, income levels, types of houses etc. In addition to this factual information, and, in fact, before the application of the survey, observation and group discussions were held in the community to gain an over-all impression of the housing conditions, patterns of living, habits and traditions, types of social organizations, attitudes and opinions of the inhabitants etc.

Before carrying out these studies, it was necessary to approach the inhabitants through the leaders of the social organizations, particularly the tribal leaders, to explain the purpose of the study and to ask for their co-operation. A number of such meetings were held and films and slides were shown in the presence of the town authorities, emphasizing the existing problems and pointing to possible directions and examples of improvement. The intention was to try as far as possible to gain the sympathy and stimulate the interest and enthusiasm of both the inhabitants of the deim and the officials of the town. Opinions were exchanged and methods of improvement were discussed. This approach proved very useful later on both in carrying out the surveys and in the subsequent application of the programme. The inhabitants were found to be quite co-operative throughout all stages. A great trend was discovered among them towards communal activities and this was developed and made use of in the programme, as will be shown. At this stage, however, it is worth while to review briefly some of the survey findings.

Deim Gilude was started by immigrants from the Beni Amer tribe who came to the area early in 1950. These were later followed by immigrants from other tribes, and the deim developed very rapidly. At the time of the survey, the deim had 6,000 inhabitants representing various tribes of the Red Sea Hills, 76 per cent of them Beni Amer. In the past, hostilities have developed among these tribes over ownership of land and other matters and, in fact, tribal boundaries were easily identifiable to the visitor to the deim.

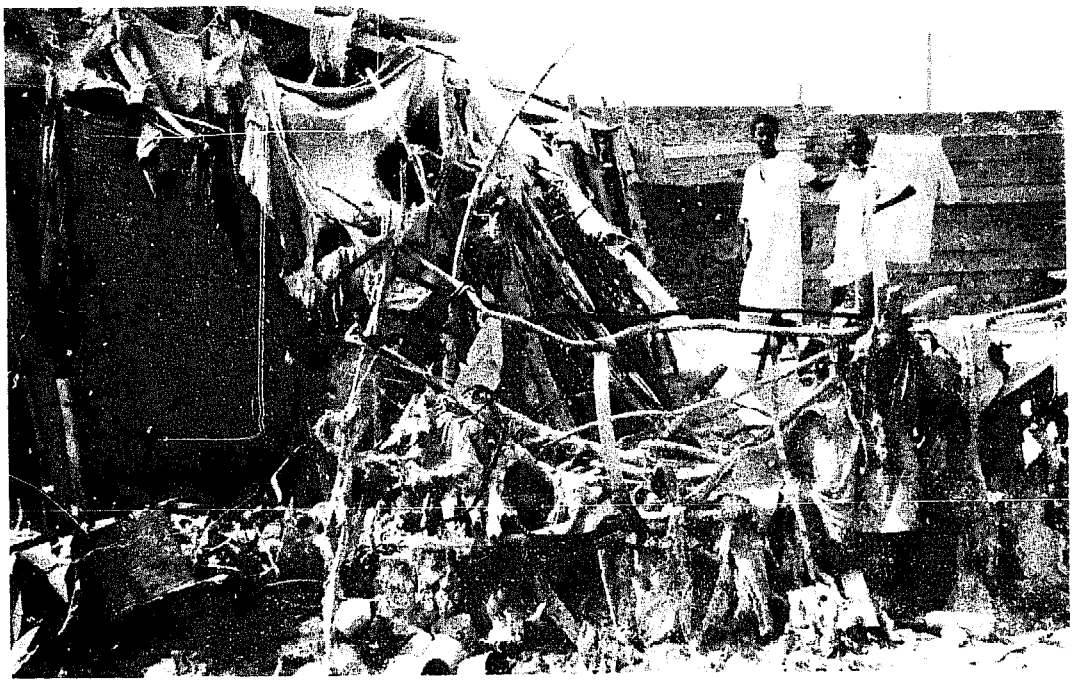
The deim was inhabited by 1,100 households, 89 per cent of which occupied single rooms. The average occupancy rate was 5.5 persons per room. Almost all of the houses were lacking basic facilities, 88 per cent being without bathrooms and 97 per cent without latrines. Drinking water was brought from the nearby warehouses and sold to the inhabitants at high prices.

An interesting feature in the form of house tenure in Deim Gilude was the existence of absentee landlords among the squatters. It was found from the survey that about one third of the shacks were let, fetching an average of 3 Sudanese pounds per month.

Almost three quarters of the heads of households in Deim Gilude were working in the harbour. Two thirds of these were unskilled daily paid workers and the rest were in permanent employment. Fifteen per cent of the heads of households were unemployed. Monthly incomes ranged from under 5 Sudanese pounds to about

FIGURE I. A VIEW OF DEIM GILUDE BEFORE THE REHOUSING

FIGURE II. CONDITIONS IN DEIM GILUDE BEFORE THE REHOUSING



20 Sudanese pounds. About two thirds of the heads of households had incomes below 10 Sudanese pounds per month and this is reflected in the very low standard of living which characterizes the area. The following table shows the breakdown of the working population into income groups.

| Income group (Sudanese pounds per month) | Percentage frequency |
|---|---|
| Less than 5 | 21 |
| 5 - 10 | 43 |
| 11 - 15 | 23 |
| 16 - 20 | 8 |
| More than 20 | 4 |

Unlike other tribes, the Beni Amer women usually go out to work and in this way contribute to the household income. It was found that almost 40 per cent of the housewives in Deim Gilude were economically active.

It seemed from the surveys that the inhabitants of Deim Gilude would remain permanently in town. Some of them went to their places of origin during the rainy season to cultivate the land but this was only temporary as they almost always came back to resume their work in the town. Otherwise, they had little to do with their home villages. New organizations and social institutions had developed in the deim and these were directed towards the general improvement of the community. For example, they had often started community health campaigns and they had often contacted the town authorities, on behalf of the squatters, asking for the provision of public services and so on.

It is worth noting here that the survey offered more than simply the statistical summary shown above. The casual and subjective experiences gained from the discussions with the inhabitants or from simply being inside the community proved of greater help and offered some guidelines for a more practical approach. For example, with respect to the employment pattern, discussions showed that the people had organized themselves into teams which worked in the docks according to the arrival and departure of ships. In this way, the whole team would be free from work two or three times a week. This casual observation was found to be of utmost importance. In the first place, it highlighted a natural tendency among the inhabitants towards group activities and, in the second place, it indicated the possibility of involving the existing teams in communal work on their free days.

## THE PROGRAMME

Worked out from the inherent tendency of the inhabitants towards communal participation, the programme was planned on a self-help basis. This was further encouraged by the absence of material resources and the urgency for a solution to the problem. The solution had to be modest; it aimed at not more than achieving a sound and conceivable improvement of the appalling housing and environmental conditions of the thousands of families in the deim.

Of necessity, the programme had to be out of the ordinary office routine: it had to be dynamic, real and straight to the point. In this way, it enabled the inhabitants to perceive, beforehand, the kind of environment they would live in and it left room for their participation in the planning of it.

The first problem to emerge, after the preparation of the inhabitants and the authorities for this kind of approach, was to find a suitable site for the resettlement scheme. This was chosen on a plain at the side of the harbour bay about one mile from the former deim. While being away from the railway development area, the new site maintained the same proximity to the working centre in the docks. The new site was planned and plots were demarcated. The sizes of individual plots varied between 100 and 200 square metres in accordance with the anticipated sizes of families. Communal facilities, such as water points, were installed beforehand in order to provide some incentive to the inhabitants to move to the new site. It is interesting to note here that the pipelines (1,500 metres in length) were actually installed by the people themselves, making use of the existing teams and shift system.

Prior to rehousing, a number of measures had to be taken to put the programme into effect. Contacts had been made with different government departments and offices where most of the people of the deim were employed, to obtain financial and material help in the form of skilled labour, lorries, equipment, building materials etc.

The solutions and the programme of work were discussed with the people, who were keen and interested, as witnessed by their attendance rate. After agreeing on the main lines the people were divided into working teams with definite responsibilities and time schedules. Twenty such teams were formed, each of which was composed of 20 people. Skilled labour, materials and equipment were distributed among the teams according to their duties.

To minimize the cost of building on the new site it was found advisable to make maximum use of the materials used in the shacks of the old deim. The work was planned so that 40 families could be moved and rehoused per day. The family to be rehoused was given at least 24 hours' notice to pack up and prepare themselves for moving Arrangements had been made with the employers of the heads of households to be rehoused for the latter to be released from work for a period of two days to supervise and help in the rebuilding of their houses. The head of each household to be displaced was issued with a card showing the number and area of his new plot together with a model plan of his new house.

Work was organized so that the 20 teams were divided equally between the old site and the new site. Those on the old site helped to dismantle the shacks and load suitable building materials on to the lorries, while the 10 teams on the new site, supplemented by skilled labourers, reassembled the houses according to model plans The responsibility of the working teams on the new site was limited to building the core of each house (at least one room), but the householder was advised and encouraged to make additions to his house, such as the construction of boundary walls and a kitchen, a bathroom etc.

Throughout the process of rehousing, the planning team (composed of only one planner and two architect assistants) was involved in the supervision and direction of the operations on both the old and the new sites. Their responsibility covered

FIGURE III. DISMANTLING OF HOUSES

FIGURE IV. LOADING MATERIALS OF OLD HOUSES ON A LORRY

a wide spectrum, from providing fuel for the trucks which removed the shacks, and settling disputes arising from the sequence of moving, to offering technical advice in the dismantling of the old houses and the reconstruction of the new ones.

To bring the new houses within the material resources of the inhabitants, and to encourage the spirit of self-help, a number of concessions were made. It had been arranged with the Ministry of Housing that the plots should be allotted to the inhabitants on lease-hold, free of charge. It was also agreed that no specific building or construction standards would be imposed; rather, improvement would come naturally as the economic and social conditions improved. In addition to these concessions, technical know-how, model plans and transport of building materials from the old site to the new were offered free of charge.

## THE NEW DEIM MAYU

The new area was called Deim Mayu, after the Sudanese May Revolution. It comprises four communities, each consisting of about 300 houses grouped around an open space which contains public facilities such as water points and social centres. The four communities surround a public centre to accommodate major facilities such as schools, a clinic, clubs etc. So far, a clinic, a youth club, a women's organization club and an adult education centre have been completed by the inhabitants on the self-help basis. The school is currently under construction (figure V).

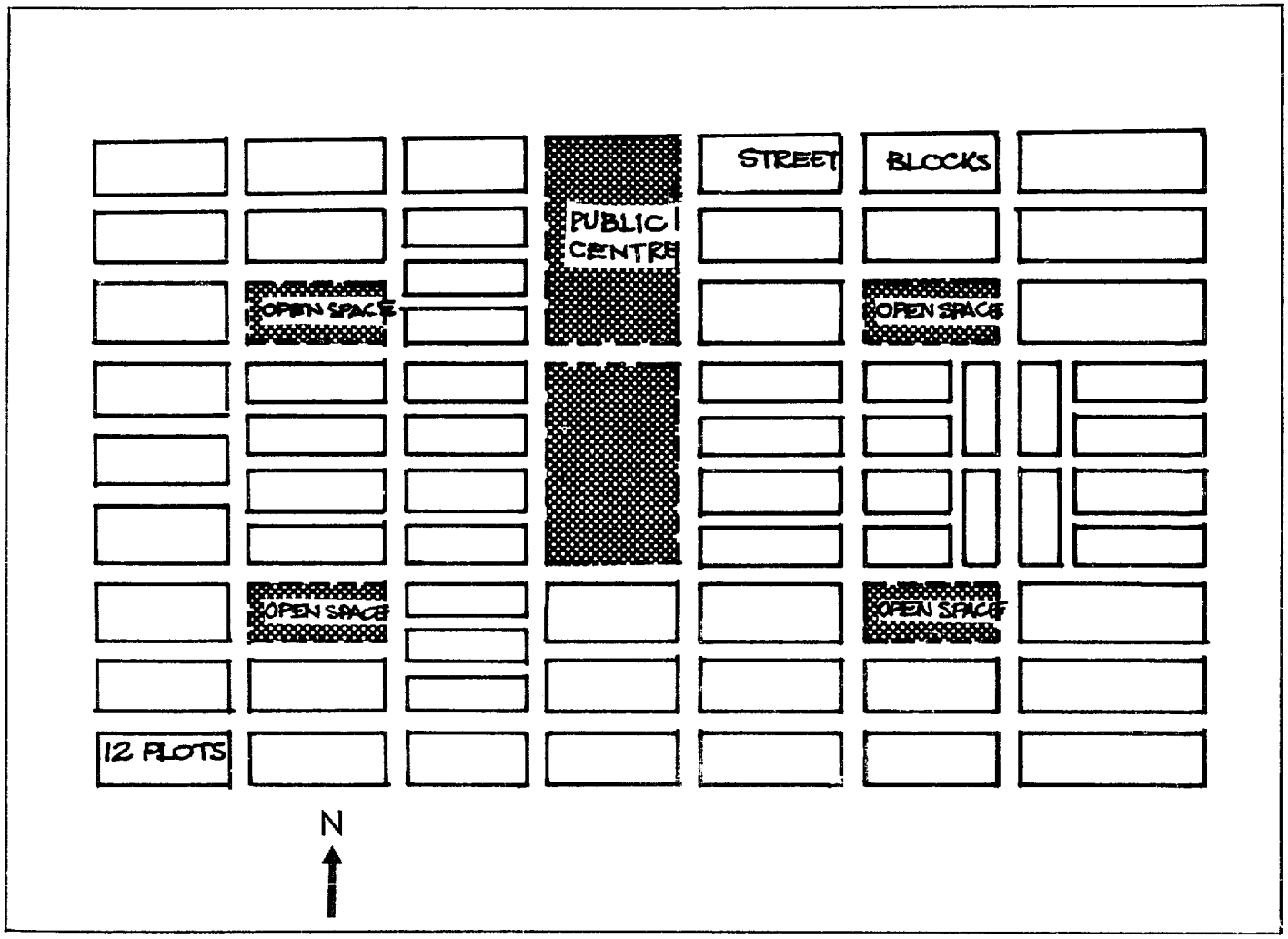
For daily household needs, shops are placed at corners around the community, but a main social and commercial centre containing a market, a mosque and a police station is located to serve both Deim Mayu and the newly planned community of Deim Sallalab (map 3). The whole area is linked by an asphalt road to Port Sudan town centre.

The scheme was planned at an average net density of 200 persons per acre. Houses were arranged in blocks of about 12 to 20 houses each, separated by wide roads on all sides. These roads were actually intended to be used as social gathering spaces and as barriers between the timber houses for protection against the spread of fire.

Communal latrines were provided around the community, but some of the inhabitants preferred to have their own latrines inside their plots. In fact, a reappraisal of the scheme has shown that remarkable improvements were made by the inhabitants to their houses. Quite a few have added pit latrines, kitchens, surrounding walls etc. This proves that these people retain great ability for self improvement, an ability which could certainly be directed to the improvement not only of their physical environment but also to their social environment.

Deim Mayu, which now comprises over 1,000 houses, was completed in a period of only one month, but both the houses and their surrounding communities are being continually improved.

FIGURE V. LAYOUT OF THE REHOUSING AREA AT DEIM MAYU



MAP 3. PORT SUDAN SHOWING THE LOCATION OF THE REHOUSING AREAS

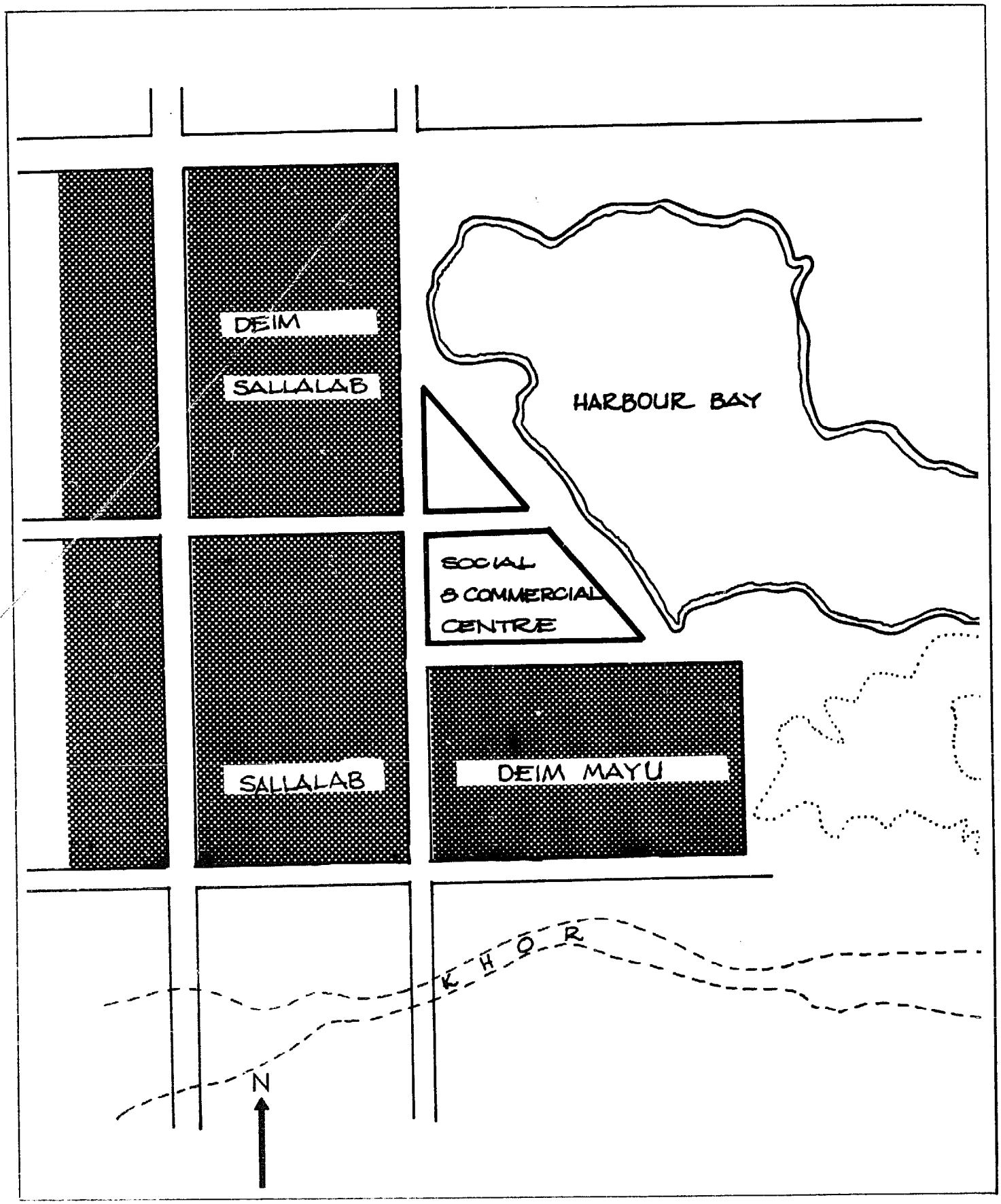



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FIGURE VI. CONSTRUCTION OF A MOSQUE AT DEIM MAYU

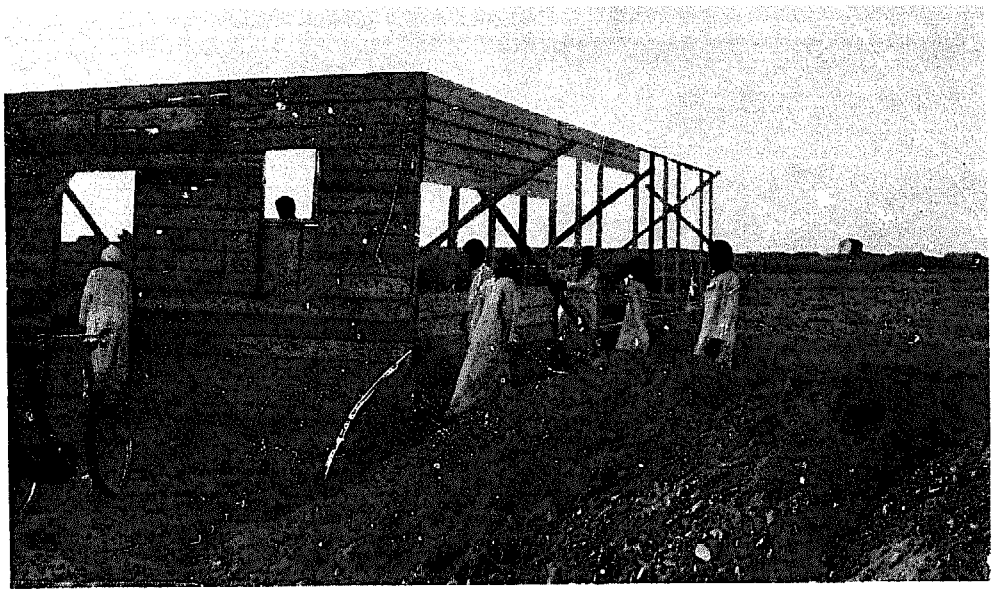
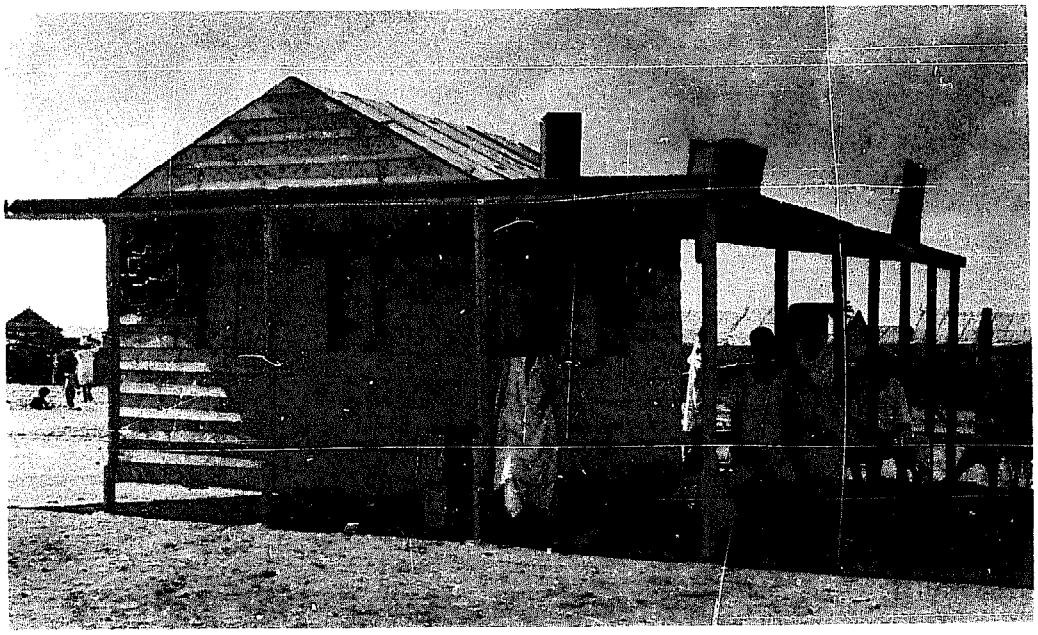


FIGURE VII. THE COMMUNITY CENTRE AT DEIM MAYU



## FINAL REMARKS

Any housing programme is subject to the political pressure of groups with certain interests to pursue. The greatest challenge in most developing countries has so far been how to direct the housing resources and programmes to serve the masses, particularly the poorer people. 8/ Housing programmes in the Sudan have until recently been directed towards what were falsely referred to as low-income groups. The houses were traditionally built to relatively high standards, and the tenants were traditionally chosen only from those who could pay for those kinds of houses. That approach did not offer a solution. Indeed, it added to the complexity of the problem, first by ignoring the growing numbers of poor urban families, and secondly by inspiring housing standards beyond the means of the average family. 9/ The Deim Gilude project has at least one merit; it improved the housing and environmental conditions of 1,100 families in a period of less than six months and at practically no material cost to the tenant (the cost per house unit being 4 Sudanese pounds).

The whole project was a unique experiment in rehousing, a bold but carefully planned administrative and sociological operation of adjustment which posed enormous political, social and administrative problems. It involved more than just clearing a squatter area and rehousing the displaced persons; it was an elaborate piece of social engineering for uniting people of different social and cultural backgrounds into an integrated community, and for mobilizing the human resources and directing them towards the improvement of that community.

The project has been visited several times since it was completed, and it is being kept constantly under observation to record its successes and failures. These will be of some significance to the programmes for the rest of the deims (one of which, comprising 2,500 families, was recently completed on the same basis). 10/

On the whole, the reappraisals point to a general level of satisfaction among the inhabitants with their new Deim Mayu. The houses are continually being improved; more rooms are added, bathrooms and latrines are being installed, building materials are exchanged for better and more durable ones etc. More important is the feeling of security which has begun to develop among the inhabitants and which is beginning to be reflected in an improved social behaviour. In the past, Deim Gilude had been an area to be avoided by the average citizen; at present, Deim Mayu is developing into a well-integrated and socially active society. Police records, for example, point to a much reduced rate of crime.

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8/ See J. Turner, op. cit.; East Africa Royal Commission, Chairman Sir Hugh Dow, Report, 1953-1955, Cmd. 9475 (London, HMSO, 1955); Design of Low-cost Housing and Community Facilities, vol. I. Climate and House Design (United Nations publication, Sales No. E.69.IV.11), as abstracted in Ekistics (Athens), vol. 25, No. 147, pp. 63-86; John D. Herbert and A. P. van Huyck (eds.), Urban Planning in the Developing Countries (Praeger Special Studies in International Economics and Development) (New York, Praeger, 1968), chap. 4.

9/ El Bedri O. Elias, op. cit., pp. 23-27.

10/ The Deim Sallalab Rehousing Project was started in December 1970 and completed in May 1971.

The main conclusion to be drawn from the pilot scheme of Deim Gilude is that: if housing solutions are to materialize, they will have to emerge from the values and the opportunities of the people involved. Five of the six months taken by the project were allocated for understanding and evaluating these values and opportunities. The physical clearance and reconstruction of the houses took less than one month. Many difficulties arose during the execution of the programme but most of these were overcome through the involvement of the leaders of the existing political and tribal organizations in the area. These were invited to join together to form a standing committee in an attempt to get them to participate and help in developing a sense of awareness and involvement among the residents. This approach helped from the beginning to remove the kind of misunderstanding which had preceded the earlier attempt and in this way paved the way for a better solution. Once this had been achieved, the solutions were no longer considered official impositions, and the new environment was found to be much less alien to the inhabitants than had once been feared.

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