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EVALUATION OF NUTRITION EDUCATION
IN A DEVELOPING COUNTRY

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INTRODUCTION

When the Freedom From Hunger Campaign (United Kingdom Committee) made a
grant in 1971 for a study in Jamaica of the effects of nutrition education on
nutritional status it could have been rightly inferred that until that time
inadequate attention had been paid to evaluation studies of this sort. This is
well borne out by the relatively small number of reported studies to which reference
can be made.

A fundamental prerequisite for an evaluation exercise is a programme with
defined objectives, activities, specific inputs of resources and conditions, a
stated level of organisation, and outputs which can be measured. On the basis of
these criteria, it could be safely asserted that there were no programmes of nut-
rition education in Jamaica or elsewhere in the Caribbean that were ideally suited
to this evaluation study. This, therefore, made it mandatory that a new programme
be set up with evaluation as an intrinsic component. The circumstances also seemed
to provide an opportunity to design a programme that was both innovative and practical,
capable of implementation within the country's resources, and of maximum relevance to
the Caribbean as well as to other parts of the developing world.

The severe limitation of resources of persons trained in nutrition and allied
subjects made it impossible to contemplate any large-scale, high-level intervention in nutrition education, and exercised definite constraints on the type of programme that could be planned. To have awaited the tortuous evolution of a system which would produce these cadres of workers in adequate numbers would have taken decades in the context of present West Indian thinking.

Logic and pragmatism, therefore, largely determined that replicability should be a major consideration in programme design. A programme that earned a high score in terms of results, but offered little hope of duplication, would be of very limited relevance to a country that lacked the type of resources used in that programme. Hence, the concept of replicability needed to be expressed in the marshalling of inputs of low cost, drawing almost exclusively on already available resources, and having minimum dependence on external resources which are often impermanent and tend to have an uneven and capricious geographical distribution.

The Project Design states as a basic concept that "there should be minimal input by personnel and services that could not normally be recruited for work within the study area or any other comparable rural area in the country .......... In effect, the programme should serve as a realistic model readily capable of duplication in other similar rural areas."

This places great emphasis on realism, which is one of the hallmarks of the field study approach in evaluation, and does not depend on the artificial re-creation of reality. Any disadvantages attributable to this approach, e.g. diminished precision and control, and reduced freedom to manipulate variables, are being countered by integrating into it some elements of the experimental approach.

At this stage it is both premature and of very limited value to present results which are necessarily incomplete and so unsuitable for meaningful discussion. Consequently, this description of the project will be primarily concerned with its concept
...and development, and an analysis of the total background of changing conditions into which it must be blended in the interest of realism.  

THE PROJECT:

Objectives

The definitive objective implicit in the design of the programme is a "favourable change in nutritional status", a measurement which is most sensitive in young children under the age of five. In view of the anticipated slowness of change in anthropometric measurements, however, a number of "specific intermediate objectives" (Table I) which allow of some practical assessment, has been interposed as a means of monitoring the changes that are felt to be substantially related to improvement in nutritional status.  

Alongside any anticipated objective changes, there should also be room for the observation of the less tangible, but probably significant, influences exerted by the project on the lives of the people involved. Among these may be listed the ability to recognise and diagnose common problems, and the capacity to utilize community and other resources to solve them, the spirit of self-help and shared responsibility, and the ability to generate as well as accept new ideas and methods.

The Study Area

The Lambs River district is a complex of small, scattered villages or sub-districts situated in the rural uplands of the parish of Westmoreland in Jamaica (Fig. 1).

The study area which embraces the sub-districts of Lambs River proper, Amity, Belvedere and Berkshire has an estimated population of about 4,000 people of
predominantly negro extraction, except for a small number of descendants of a
colony of German immigrants who settled in Seaford Town in the 19th century.

The majority of the working population are subsistence farmers or un-
skilled labourers, unemployment is high, and there is considerable outward migra-
tion of young adults, especially men.

Land ownership is for the most part restricted to small holdings of less
than 2 acres, and most of the food grown is the starchy root crops with a
minimum of legumes and cereals.

There are five government primary schools, and one health centre for the
entire district.

In recent months electricity reached a part of the district for the first
time. Most of the roads linking the villages are unpaved and internal transporta-
tion is extremely limited. Water-supply is mainly from public tanks, but in times
of severe drought water trucks have to be used.

The control area - the Hopewell - Holly Hill district, is separated from
Lambs River by 14 miles of difficult road. It has very similar topographic and
socio-economic features, and on the basis of existing data appears to be a well-
matched control\textsuperscript{5}.

Phasing of the Project

The project, which is for a three year period, was divided into three
phases: I - Preliminary Phase for establishing the project and collecting
baseline data. (6 months).

II - Action Phase for the implementation of the programme and continuing
data collection. (2 years).

III - Evaluation Phase for final evaluation. (6 months).
The first phase involved site selection, the initial socio-economic survey of households, and anthropometric studies of children under-5. Equally important during this phase, however, was the introduction of the project to the people and "winning" their involvement - the cornerstone for the successful development of this type of programme structure.

This required a continuing series of honest, patient and tactful dialogues with individuals, and frank, empathic communication with small and large groups of citizens. The necessity for this approach is underlined by a statement in the Project Design: "It is not intended that the investigators would themselves be responsible for the actual implementation of an educational programme. Inevitably, however, they will be involved in the planning of such a programme, but theirs will definitely not be a leadership role."

The attainment of this early goal was, therefore, not surprisingly delayed with some consequent postponement of the beginning of the second or Action Phase, especially as it had become clear that laying the groundwork in the four widely dispersed villages of the study area could not be satisfactorily accomplished within the time limit of the first phase; but the undoubted importance of these steps is sufficient to justify the resultant delay and postponement.

A number of factors helped to determine the content of the nutrition education programme outlined in Table I, the approach to its teaching, and the form the specific objectives should take. Among these factors were the very nature of the philosophy of replicability on which the project is based, the quality and numerical strength of the human resources, the level of overall development and sophistication, and the almost total absence of community organisation or group activity in the district. Together, they have influenced the decision to focus the educational inputs on only
a small, carefully chosen range of subjects for simple presentation to specially selected target groups.\(^6\)

While the third phase is designated the Evaluation Phase, provision has been made for the continuous feed-back of findings and information into the programme during the Action Phase. This introduces a deliberate flexibility that is essential in programmes built around people both as individuals and as communities; it stems from an awareness that the "psycho-social-humanistic aspects of nutrition education" require as much emphasis as the "scientific-factual-research approach", and the recognition that a prime goal of the educator is "to produce well adjusted, rational people who can think as well as relate and feel".\(^7\) An even more practical justification for programme flexibility has been the wide range of vicissitudes continually experienced in the availability and participation of resource people.

This flexibility, however, has not detracted from the specificity and precision which are to be found in data-collection and input-description, e.g., recording of weights, etc. of children, recording the duration of volunteer home visits and the subject-matter covered, census of school and home kitchen gardens and their activities. These are but a few of the measurements and descriptive data which need to be gathered in order to determine the extent and nature of change at the end of the project, and to provide some insight into both the effectiveness and efficiency with which the programme was executed.

The control area, without any of the special inputs described for Lambs River, will have similar collections of data as far as this is feasible. Comparison of data from the two areas should then provide a sounder basis for the judgement of significant changes in nutritional status, and for assessing the contribution of nutrition education to such change.
Project Staff and Resources

At the outset the investigating team consisted of a medical doctor as Project Director and a social-anthropologist who lived in the study area. The Project Director has maintained contact with the area by periodic visits, totalling about five working days a month. The social-anthropologist's involvement in the project ended shortly after the transition from the Preliminary to the Action Phase.

At approximately the same time, a young, indigenous worker was appointed Project Field Assistant. As a resident of the sub-district of Belvedere, she has an intimate knowledge of the people and a sympathetic understanding of the prevailing conditions in the whole district. Her energetic commitment to the project, combined with a modest secondary education, makes her an asset to the community, and fits her for her role in project promotion, data collection and coordination of various other activities. The need for the establishment of this type of long-standing rapport with the community is well recognised, and it can best be achieved through the services of a permanent worker in residence.

During the early months several meetings of citizens of the district were held for the purpose of informing them about the proposed project, and motivating them to appreciate it as a worthwhile undertaking. The Citizens' Group, as it was called, consisted of some 20 or 30 residents of the district including school teachers, health and agriculture personnel, small farmers, religious leaders, and other interested individuals of no special standing in the community. It was stressed that their involvement from the very beginning and at every stage thereafter was crucial to the development of a viable project. The Project Director made a special point of emphasising the value and relevance of the participatory approach in the local and parochial context, but also pointed to the possibility of wider regional, or even global, application of any 'good things' that might emerge from the study.
Eight months after the inception of the project, the Nutrition Education Action Committee (NEAC) was born out of the Citizens' Group. Built upon the minimum of formal structuring, NEAC has developed into a strongly self-reliant body "alert to the sensitivities and idiosyncracies of the people" and with "a sense of conviction of the usefulness of the exercise in which they have become voluntarily involved", while maintaining "a realistic range of expectations for the project". This body now carries out much of the planning of programme activities with the advice and guidance of the Project Director, and puts them into action with the help of the Field Assistant. Besides, NEAC has very rapidly learnt how to recognise and use effectively in the programme all the resources within reasonable compass of the Lambs River district. The organisation by NEAC of "Helping Committees" in the sub-districts has been an important step in further establishing the project among the people. KATZ, in her discussion of the Enabler Model in Headstart Programmes, underlines the importance of the "participatory educational approach", and recognises that this should embrace the people at the grass roots level.

Methods

The scheme of operation of the project (Table I) classifies the inputs under four headings according to discipline, viz. Health, Education, Agriculture and Community Development. This is done for reasons of convenience rather than to emphasize any division of goals or efforts. Also represented in this scheme are the human resources, the types of activities and special subjects through which they might reach target groups, the intermediate and ultimate objectives of the project and the means by which their achievement will be checked.

The district's division into four discrete village units of sub-districts with separate resources and characteristics has made it possible to apply some of the educational inputs selectively, e.g. teaching mothers at child welfare clinics is
possible in Lambs River proper but not in Berkshire, but volunteer home visiting is
done in Berkshire and not in Lambs River. Although inputs like nutrition teaching
and school gardens are common to all sub-districts, they have been given special
emphasis in selected schools (Table II). On the other hand, there are certain
inputs like films and posters which, for practical reasons, could be used only to a
very limited extent, while radio and television could not even be considered.

Nutrition Teaching and School Gardens

Some of the major educational inputs which have been in operation in the study
area for nine months or longer will now be more closely examined. The teaching of
nutrition has received full and enthusiastic support in four schools into which a
syllabus for the teaching of nutrition as an integrated subject has been introduced.
In the absence of any teachers adequately trained in nutrition, the subject is taught
mainly by interested headteachers to senior grade pupils. While facts and informa-
tion form the basis of their teaching, there is a deliberate slant towards the stimu-
lation of student interest in the social and economic aspects of food and nutrition.
In addition, provision has been made in two of these schools for nutrition to be
taught as a special subject by a Home Economics Extension Officer, a diplomate of a
technical college, employed by the Ministry of Agriculture. These sessions of 1 to
2 hours weekly are planned for 12 to 14 year old boys and girls, and are designed to
have both a practical and theoretical content. In like manner, the special assistance
of an agricultural officer and a local farmer has been arranged for two of the school
gardens to provide a much needed stimulus in a sphere of activity at present overcome
by lethargy, and recently the subject of public comment throughout the Caribbean
region.
Volunteers

The introduction of a corps of volunteers to function as home visitors in specially selected homes with children under-5 provides the input side of the project with its main person-to-person approach. These twelve women volunteers include unemployed teenagers just out of school as well as mature, employed married women who all live in one or other of the two sub-districts they serve (Table II). Their training consisted of twelve weekly sessions of 1 to 2 hours duration on simple practical nutrition topics and a double session on human relations. Emphasis was also placed on the use of special visual aids, the preparation of weaning foods, and on techniques of simple record keeping\textsuperscript{14}.

The approach to families that is fostered is one of friendliness, and the technique of the simple, direct message, e.g. buying of the cheap, government-subsidised powdered milk, is encouraged. The demonstration of "multimixes" - weaning mixtures based on home-grown foods, and opportunities for mothers to practise them play an important part in their activities. Flash cards depicting the story of malnutrition and its prevention, and other educational material, such as illustrated pamphlets, are used to add variety and interest to home visits.

Liaison between volunteers and the district public health nurse is seen as a vital linkage that mutually strengthens their respective contributions to the welfare of the community. The nurse selects for visiting by volunteers the homes of child welfare clinic defaulters, children who are failing to thrive, and newborn babies. In turn, the volunteers bring to the nurses attention children who, in their opinion, are in need of professional advice and treatment.

Monthly meetings of volunteers with the Project Director and Field Assistant serve the purpose of reviewing records, discussing case histories, resolving any organisational problems, and providing supplementary training.
A comprehensive record of the number of homes/children reached, the subjects discussed or demonstrated, and the time spent on these activities is being kept by the volunteers. These should be of special value when their relationship to changes in feeding practices and to the weight gain of the visited children is assessed at a later date.

**Clinic Teaching**

The third principal input, viz. teaching in the child welfare and ante-natal clinics under the direction of the public health nurse, is directed towards the mothers and young children of Lambs River proper, and, to a lesser extent, Belvedere, but hardly reaches into the other sub-districts.

The evaluation of the roles of these various educational approaches will be done according to the relevant intermediate objectives and indicators of change set out in Table I.

**Training**

Although the only group to receive any special, systematic training has been the volunteers, the need for some wider dissemination of nutrition knowledge and information among other categories of people in the community has been recognised. In an effort to fulfil this need, a two-day seminar on Basic Nutrition for School and Community was held especially for teachers, but with other Committee members and interested citizens in attendance. The success of this seminar inspired NEAC to organise a Nutrition Information Day, the theme of which was 'How to make the best use of local foods in the family diet'. The encouraging response of the 50 parents who attended, the enthusiastic participation of the volunteers, and the sense of achievement of Committee members all augur well for the future of this approach to nutrition education elsewhere in the district.
DISCUSSION

The establishment of any programme of development in a rural setting is never easy, especially when it is being carried out with replicability in mind. FREEMAN and SHERWOOD\(^1\)\(^5\), in a discussion of intervention programmes, state that "Even if one begins with very definite and clear cut intentions to conduct and evaluate "repeatable" programmes, it is possible to underestimate grossly the difficulties which are involved in both designing and monitoring programmes with the goal of repeatability in mind".

Doing so on an economical budget and without specialised resources of manpower makes it even more difficult, but keeps it genuinely realistic, and this is what the project aims to do.

ROBERTS\(^1\)\(^6\), in discussing research in the educational aspects of health programmes affirms that "reproducing an educational problem in a contrived setting may lead to over-simplification and artificiality which reduces the applicability of findings". In the same vein, the Caribbean Food and Nutrition Institute's Policy Committee recently endorsed the philosophy of replicability, as applied in this project, by claiming that any adverse effects and their causes would be as valuable as success in the project and that the study would only be relevant if it was made within the usual vagaries of staff changes, etc. which beleaguer such activities in the Caribbean.

Indeed, there have been a number of staff changes and deficiencies which have struck at the core of the project's resources and partially threatened its viability in the early stages. The absence of the public health nurse for the last eight months and of the agricultural extension officer for six months, the many changes in school staff - in some instances with a turnover of more than half the staff in the course of two terms, and the unreliability of some other resources
have all been psychologically traumatic to the project team. Only the buffering
effect of programme flexibility and resilience of spirit have enabled the project
to free itself from these deterrents and continue advancing towards its goals.

In the process, however, a disproportionate amount of the time and energy
of the project team and NEAC had to be devoted not only to programme planning and
development but also to managing the many growing pains.

In countries like the Caribbean territories where nutrition education is
traditionally associated with either a food aid scheme or a health service component,
the type of pure educational input used in this project needed careful and patient
interpretation to the people in order to make it acceptable in this form.

In no other aspect of the project has this been so crucial as in the earlier
stages of implementation of the volunteer home visiting programme. Then, every
householder visited by a volunteer expected a gift of food, and was disappointed
to be given only information and advice. Six months later a transformation had
occurred - volunteers were receiving requests from 'unvisited' homes to start
visiting; for these homes, information and advice without gifts now seemed to be
worthwhile.

A question that inevitably arises whenever the subject of volunteers is being
discussed is "What type of incentive does one provide to ensure the sustained inter-
est and participation of volunteers in health programmes?" In this project this has
been accomplished over a one year period by (i) attaching considerable importance
to their function and building a sense of partnership with all other project partic-
ipsants; (ii) being explicit about their role and their relationship to other persons
within the project and in the community at large; (iii) the spontaneous development
of a healthy camaraderie and 'esprit de corps' within the group, resulting from
frequent contact, informally and through meetings, as well as from sharing a common
concern; (iv) ensuring some social activity that maintains these bonds while providing some diversion; and (v) the payment of a token stipend of US$6.00 per month as transportation allowance, - the only material incentive.

The transition into a state of full participation and growing self-reliance among the people of the community has also been a slow process. But there is now no known organisation in the district that is either unaware of or not participating in the project; and the formation or resuscitation of groups and societies with some concern about solving the problems of food and nutrition among their other interests is very largely the result of the project's influence. Parent-teacher associations and branches of the Jamaica Agricultural Society have either been created or entered a new phase of activity in which nutrition is an important feature. And the linkage between these organisations on the one hand and the district Helping Committees and volunteers on the other enhances hopes of sustained interest by all these groups in the attainment of the goals of the project.

There has been a recent national awakening in Jamaica to the need for changes in policy related to land use and food production because of their important economic and social implications. Whether this fresh outlook will influence the course of the project through the programmes that are initiated cannot as yet be determined. It will, however, be necessary to take some account of their influence in the study areas before the final evaluation is done.

Other potential influences on the expectations of people and on the quality of the services they receive are the recently launched Literacy Campaign and the introduction of community health aides - a new category of health worker. So far, neither literacy classes nor health aides have infiltrated the study or control area, but it is not unlikely that they will both do so some time during the Action
Phase of the project. In that case, they may have to be incorporated as new resources into the framework of educational inputs, and be subject to evaluation.

Throughout the time that the project has been in existence, there has been close cooperation with the administrative and executive branches of the relevant ministries of government. There has been considerable goodwill with regard to the sorting out of staffing problems and provision of personnel to assist in various aspects of the project. Nevertheless, for a project that is so heavily dependent on government involvement through its field personnel, there has been a disconcerting lack of a sense of genuine commitment in several quarters. Negative attitudes of this sort have already detracted from the quality and intensity of a number of the important educational inputs. The resulting dilemma is one that allows of no easy solution. However, it does demonstrate the potential, if not real, difference that must be anticipated between a clearly defined, fully sponsored, and well financed government project such as the Literacy Programme - created, designed and executed by the government itself or its appointed agents, and the privately funded and designed, but government-dependent project that always falls short of priority status, and usually fails to rise above the 'ad hoc' level of consideration among governmental activities.

It is, therefore, not surprising that it is the non-government-dependent sections of the project - the Nutrition Education Action Committee and its Helping Committees, the volunteers team, and the Project team, which have so far demonstrated the greatest dependability, worked the most assiduously, and given the highest hope for sustained, successful inputs and promising results.

To refer to the project as a challenging and fascinating one is by no means the mere repetition of a cliché; it is an honest description of an exercise in health promotion, community development, popular psychology and educational innovation.
The preceding account of the project has attempted to cover it as fully as possible. It has been inadequate. It could not take stock of its many nuances, nor of every facet in the approach needed to generate and sustain interest and action; nor was there scope in this type of presentation to describe more fully the gradually evolving process of change.

PROJECTIONS:

In view of the project's theme - replicability, it seems fitting that some views on the wider application of the inputs now on trial should be expressed.

From the Scheme of Operation, the column headed 'Resources' represents the key to the programme. For any new area contemplating a similar programme, the strength and success of the educational inputs will depend almost exclusively on the professional quality, and the personality and enthusiasm of the individual resource person, with the latter attributes being the dominant ones.

What this "real-life model" hopes it will demonstrate is that, a certain minimum of available resources can, by a process of redeployment and on-the-spot training, contribute to a community's education in nutrition; this, of course, in association with an active local committee, supported by an energetic field officer.

It is, plausible that in countries where there are community health aides or similar cadres of health workers, they can take over the functions performed here by volunteers. And in situations where there are some community organisations of adequate strength and resourcefulness, these can be the focus for the establishment of nutrition education programmes.

Whatever the outcome of this particular project, however, it already seems imperative that programming in nutrition education needs to become a solidly endorsed
and fully supported area of governmental action. Then, it is in the field of evaluation, rather than in programme implementation, that other agencies can make a more useful contribution.

SUMMARY

A project for the evaluation of the effects of nutrition education on nutritional status has been in operation in Jamaica since July 1971 on a grant from the Freedom From Hunger Campaign (UK Committee).

The project is in three phases - Preliminary, Action and Evaluation, and has entailed the planning and establishment of a programme in nutrition education and its evaluation.

A major consideration in the project design is that it should be replicable, of low cost, and using only readily available resources, as far as this is feasible.

Emphasis has been put on community participation both at the level of planning and implementation. Principal inputs are through the schools, clinics, social organisations and volunteer home visiting.

The project is halfway through the Action Phase, and a review of its present position and some implications for the future have been presented.
REFERENCES


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<td>Organization of meetings</td>
<td>Simple facts about food</td>
<td>Greater knowledge about food</td>
<td>IN COMMUNITY:</td>
<td>Level of awareness of and participation in matters of food and nutrition</td>
</tr>
<tr>
<td>DEVELOPMENT</td>
<td>Citizens</td>
<td>Youth</td>
<td>Group and Club</td>
<td>meetings</td>
<td>Use and preparation of foods</td>
<td>Better budgeting</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Community Development Officer)</td>
<td>Special Groups</td>
<td></td>
<td></td>
<td>wise buying</td>
<td>Improved preparation of food</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Motivation to help self and community</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* J.A.S. = Jamaica Agricultural Society
* C.A.L.A. = Cambridge Area Land Authority
* N.E.A.C. = Nutrition Education Action Committee
TABLE II
CHART OF EDUCATIONAL INPUTS
IN STUDY AREA AND CONTROL AREA

<table>
<thead>
<tr>
<th>MEDIUM OF SUB-DISTRICT</th>
<th>CLASSROOM TEACHING</th>
<th>SCHOOL GARDEN</th>
<th>KITCHEN GARDEN</th>
<th>CLINIC TEACHING</th>
<th>VOLUNTEER HOME-VISITING</th>
<th>GROUP ORGANIZATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>STUDY AREA:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lambs River</td>
<td>++</td>
<td>+</td>
<td>-</td>
<td>++</td>
<td>-</td>
<td>±</td>
</tr>
<tr>
<td>Belvedere</td>
<td>++</td>
<td>+</td>
<td>±</td>
<td>-</td>
<td>-</td>
<td>++</td>
</tr>
<tr>
<td>Amity</td>
<td>+</td>
<td>++</td>
<td>+</td>
<td>-</td>
<td>++</td>
<td>+</td>
</tr>
<tr>
<td>Berkshire</td>
<td>+</td>
<td>+</td>
<td>++</td>
<td>-</td>
<td>++</td>
<td>+</td>
</tr>
<tr>
<td>CONTROL AREA:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Holly Hill-Hopewell</td>
<td>±</td>
<td>±</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

++ = Major input - receiving special emphasis  
+ = Moderate input - some increase in emphasis over pre-project level  
± = Minor input - doubtful  
- = No recognisable input

N.B.: Films and Posters are not included as special inputs. Films on nutrition topics are inadequate in number, variety and relevance, and shows can be arranged only very infrequently. Posters are not easily available and are very costly to produce. Only small-scale use of hand-done posters was possible.
Figure I

SKETCH MAP OF
LAMBS RIVER DISTRICT
(NOT DRAWN TO SCALE)