

Pan American Health Organization

ADVISORY COMMITTEE ON MEDICAL RESEARCH

Seventh Meeting

Washington, D.C., 24-28 June 1968

Item 12.6 of the Agenda

RESEARCH AND THE CARIBBEAN FOOD AND NUTRITION INSTITUTE

Ref: RES 7/8
24 May 1968

PAN AMERICAN HEALTH ORGANIZATION
Pan American Sanitary Bureau, Regional Office of the
WORLD HEALTH ORGANIZATION

Washington, D.C.

RESEARCH AND THE CARIBBEAN FOOD AND NUTRITION INSTITUTE

Table of Contents

	<u>Page</u>
Introduction	1
1. Research coordination	3
2. Research training	4
3. Research activities	4
4. Research priorities	8
5. Annex I Field investigations into problems of community nutrition	11
6. Annex II Proposed CFNI project "PCM Evaluation Unit"	23
7. Annex III Proposed CFNI project "Population Nutrition Unit"	31

RESEARCH AND THE CARIBBEAN FOOD AND NUTRITION INSTITUTE*

The Caribbean Food and Nutrition Institute (CFNI) has as its main over-all objective the improvement of the food and nutrition situation in the fifteen countries of the English-speaking Caribbean, through four main types of activities - coordination, advisory service, training, and field investigations (or applied research).

All activities of the Institute, including research, have to be devised with this ultimate objective in mind.

Likewise, the basic philosophy of the Institute is that the community nutrition level in the Caribbean, as anywhere, is related to numerous, complex inter-acting ecological forces which can be indicated in the following highly over-simplified "equation" or formula:

C	Economic	Educational	Food	Aspects	(Conditioning)
N	Level	Level	Avail-	of	(Infections)
			ability	Health	(Preventive)
L					(Services)

Population Size

The multifactorial nature of food and nutrition problems plainly necessitates an interdisciplinary approach to solutions. This strategy is interwoven into all CFNI activities, including research, and is attested to by the joint international sponsorship of the Institute by PAHO/WHO and FAO, and by the range of training

*Prepared for the Seventh Meeting of the PAHO/ACMR by Dr. D. B. Jelliffe, Director, Caribbean Food and Nutrition Institute, Kingston, Jamaica.

RES 7/8

and professional backgrounds covered by present staff, and still more in those envisaged for the future.

The CFNI also has to take into account the geographic and research realities of the region - that is widely scattered islands, with a limited number of centers of advanced knowledge concerning different aspects of food and nutrition unevenly distributed through them, but with intervening areas with much more limited technical knowledge and resources. Plainly, the CFNI has a bridging role, not only between such traditionally artificially separated disciplines as agriculture and health, but also between centers of modern knowledge and information and the Caribbean at large.

With limited CFNI staff and with restricted resources of all types in the Caribbean, the policy and program of the Institute is intended to be geared to priority community problems in the field of food and nutrition. It seems logical, therefore, that its research activities should be mainly directed towards the scientific measurement of the size, nature, distribution and relative urgency of these problems, with the assessment of their causation (by what may be termed "wide-spectrum epidemiology"), and with operational research directed towards the quantitative evaluation of the cost-effectiveness of food and nutrition programs intended to ameliorate the situation*.

*Footnote: These would include interdisciplinary nutrition education programs and studies designed to evaluate the methodology of protein feeding programs for children in the community.

Lastly, and by no means least, the CFNI's present, and still more future, role means that the expectations and felt-needs of the governments of the area must be important molding forces in the form, shape and direction in which the Institute's activities develop. Conversely, it may be hoped that CFNI activities, including those in research, will feed-back to governments and may, when appropriate, help to modify opinion and programs.

The research involvement of CFNI must, then, be considered in light of its over-all objective, its interdisciplinary philosophy and within the constraints and opportunities of its geographic and organizational framework. These plans may be considered under three headings: (1) research coordination, (2) research training, and (3) research activities.

(1) RESEARCH COORDINATION. The CFNI has a definite, although often informal, role to play in coordination of research, or at least, in dissemination of ideas and information through the area. Its staff are frequently mobile through the different islands, and have a double entrée to different groups as an inter-Caribbean body because it is under the direction of PAHO/WHO and FAO and because of the Institute's association with the University of the West Indies. Already many opportunities have arisen both to channel information from centers of knowledge to those in the field, and also to make research scientists aware of parallel work related to their field being undertaken elsewhere in the Caribbean.

In addition, seminars and conferences to be undertaken by the Institute may be expected to help in the coordination of research

knowledge, as, for example, with a meeting being held in Guyana in July 1968 on the development of protein foods for the Caribbean.

(2) RESEARCH TRAINING. Training in the methodology of scientific applied research, especially of an interdisciplinary nature, will run through all Institute educational activities, with special relation to the need for its incorporation in in-service activity on return home.

Thus, in the nine months "long course" in Community Nutrition, to be initiated in January 1969 for candidates from health, agriculture, education and community development, basic research methodology will be covered, including the need for the collection and analysis of accurate unbiased information and such statistical concepts as sampling and the calculation of the significance of results, both using manual methods and employing instrumental assistance, including the computer.

This approach will be reinforced during the course by visits to selected research units in the area that are working in different aspects of food and nutrition. In addition, students will undertake research in the course of their training, during a period when CFNI staff and students will carry out an interdisciplinary field survey together in a Caribbean country, and during the last three months of the course when an in-service field research project will be undertaken by each student under CFNI supervision in their home country.

(3) RESEARCH ACTIVITIES. The research activities of CFNI will be related to priority practical problems. They will be interdisciplinary, collaborative and capable of prompt feed-back to evaluate,

guide, modify and initiate appropriate preventive programs.

Collaborative Research. This will be undertaken in a variety of ways. Firstly, as it is not a function of the Institute to involve itself in more elaborate laboratory research, the cooperation of existing centers, preferably in the Caribbean, will be solicited if investigations of this type are required as a component of a field research project. Past examples are given in Table I.

Purpose of Study	CFNI Activity	Research Unit Activity	
		Procedure	Unit
(1) Arm Circumference as a Public Health Measure of Protein Depletion	Arm Circumference Measurements (correlated with other anthropometry)	Lean Body Mass (Radioactive Potassium)	Tropical Metabolism Research Unit, Jamaica (Professor J. Waterlow)
(2) Cost/Nutrient Assessment of Caribbean Foods	Collection of Data from nine islands	Analysis of Various Proprietary Foods (with no previous available information)	Scientific Research Council, Jamaica (Miss H. Fox)

The joint study with the Tropical Metabolism Research Unit is to be extended in the near future to include a correlation of anthropometric measurements, lean body mass (radioactive potassium) and various biochemical tests of PCM (including serum albumin, the amino-acid imbalance test and the hydroxyproline excretion test) in young children with mild-moderate or marginal malnutrition.

Secondly, collaboration will also be built up with Caribbean or external centers, units and schools to develop cooperative projects of shorter or longer duration. At the simplest level, this may entail staff visiting the area for short-term joint projects

To-date, several of these have been undertaken, as with a comparative community survey correlating anthropometry and scalp hair morphology in poorly nourished young children in the island of St. Vincent, and with a two month socio-cultural study into village concepts of the etiology and therapy of marasmus in Jamaica.

Proposed for next year will be a joint field study undertaken with the Rockefeller Schistosomiasis Research and Control Center in St. Lucia into possible inter-action between endemic schistosomiasis and malnutrition in school-children.

Also, wherever possible, CFNI field research will be carried out in active collaboration with appropriate government services. For example, the CFNI staff carried out a "Rapid PCM^{*} Survey" in October 1967 in St. Vincent together with representatives of the health, agriculture and education services of that country, as well as voluntary agencies. In this study, the prevalence of protein-calorie malnutrition of early childhood (PCM) was assessed in the whole island using anthropometric measurements, at the same time as protein availability and utilisation in the country as a whole and

*Footnote

PCM: "protein-calorie malnutrition of early childhood.

in families was assayed. Collaborative involvement at the planning stage and during implementation have since been reinforced by feed-back of preliminary findings to a meeting of the St. Vincent's national food and nutrition committee, attended by CFNI staff.

Another example of mutual collaboration and involvement by government and CFNI is in relation to the FAO/WHO/UNICEF Applied Nutrition Program which is to be started in Barbados in the near future. The Institute has been involved in joint planning of the pre-program survey, so necessary for its subsequent evaluation, and will be assisting in its implementation and later assessments of its effectiveness.

Lastly, and importantly, CFNI field research will always be undertaken with the advice of, and in collaboration with, other PAHO/WHO and FAO colleagues working in the area, including Zone I Headquarters staff, Country Representatives and appropriate U.N. technical advisors working in food and nutrition-related fields.

As an example, currently a UNDP Groundwater Survey team is working in rural Jamaica, including an agro-economic unit, which has carried out a statistically representative survey of land tenure, family structure, economic circumstances and crop production by small holders and subsistence farmers. CFNI has been able to collaborate in this project by assisting in the nutritional evaluation of the crops grown in relation to the nutrient needs of the families in the area.

RESEARCH PRIORITIES. Twelve important topics for field research by CFNI have been suggested in the "Proposed Program of Work and Budget

of the Caribbean Food and Nutrition Institute (1967-9)" (p.16-22) (see also Annex: I).

Experience during the first year of CFNI's activities have clearly re-emphasized two priority areas for interdisciplinary community research in the Caribbean context -- these are food and nutrition problems related to protein, especially as regards young children, and problems associated with various aspects of the inter-action of population dynamics and food and nutrition.

In view of the limited CFNI staff and their manifold other duties (especially the new nine-month course in Community Nutrition commencing in Jamaica 1969), it is apparent that applied research of the quality and volume, and at the tempo that the contemporary changing scene warrants can only be achieved by the establishment of two CFNI mobile field research units -- the "PCM Evaluation Unit" and the "Population Nutrition Unit".

The function and structure of the "PCM Evaluation Unit" is suggested in Annex: II. Basically, it would assess the prevalence of PCM in the English-speaking Caribbean, and correlate this with its etiology, including protein production, availability and utilisation in countries, communities and families. Its findings would be of value in planning preventive food and nutrition programs, and in the evaluation of any spontaneous community changes or planned ameliorative activities, including FAO/WHO/UNICEF "Applied Nutrition Programs". The suggested "Population Nutrition Unit" is outlined in Annex III. In general, the unit would be mainly concerned with field research into the nutritional consequences of

the inter-action of population and food supplies into different forms of intra- and inter- country migration, into family size and stability, and into the effectiveness of various improvement programs.

The Caribbean countries covered by the CFNI possess certain advantages for community research of the type envisaged by these two units. They have relatively small circumscribed populations, one common language and quite reliable recording of vital statistics. They are also plainly beset with increasingly pressing nutrition problems related to food supplies, especially protein foods suitable for young children, and related to a geometrically increasing population with very limited land resources.

Therefore, while the field investigations undertaken by CFNI in these two areas will be devised with the improvement of the food and nutrition situation of the people of the Caribbean in mind, it seems probable that the special circumstances of the "community research laboratory" of the Caribbean may be expected to yield scientific information related to these two major global areas of concern that will be of value both to scientists and to planners of programs, related to food and nutrition, not only in the Caribbean, but also in much wider areas of the world.

A N N E X : I.

FIELD INVESTIGATIONS INTO
PROBLEMS OF COMMUNITY NUTRITION

FIELD INVESTIGATIONS INTO PROBLEMS OF COMMUNITY

NUTRITION

Projects. The following field research areas appear to be priorities in the Caribbean and will be included in CFNI activities as soon as practicable. The list of proposed field investigations given is to be construed as giving examples and not necessarily as specific or all-embracing.

Details, especially concerning timing, cannot be given at present as funds for some projects mentioned are being sought from Foundations etc. The studies envisaged do not require additional funding on the part of governments.

(1) COST-AVAILABILITY OF FOODS

There is an acknowledged need for continuing assessment of the nutritional significance of food availability and costs in the Caribbean. In an area where protein-calorie malnutrition of early childhood is a major health problem and an important part of the edible protein is imported, such data could serve multiple functions.

These include (a) assist in describing the socio-economic setting wherein nutritional problems are most likely to occur. (b) identify food groups requiring special efforts to assure year-round availability at reasonable cost to the consumer, (c) suggest areas where improved food conservation and distribution methods could reduce losses occurring in the food chain, (d) pin-point imported foods of which production from local resources could be particularly beneficial to economically-disadvantaged population

groups, and (e) provide baseline information permitting future evaluation of the effectiveness of ameliorative programs.

(2) NUTRITIONAL IMPLICATIONS OF INCREASED LOCAL FOOD PRODUCTION

The Caribbean countries have recently placed great emphasis on programs promoting increased local food production and more efficient utilization of available food supplies. Studies focussed on the identification and quantification of nutritional benefits to the community (as apart from economic returns) which can be expected from ongoing and future governmental schemes organized to promote food production and utilization could provide useful guidelines for use in establishing priorities, when limited funds are available for allocation to alternative approaches to national development.

(3) NUTRITIONAL CONSEQUENCES OF FOOD IMPORT AND EXPORT POLICY

It is axiomatic that in any given country with limited land and economic resources available for the production of agricultural commodities, all government policies or programs influencing food imports, exports and local distribution methods will reflect on the types and quantities of foodstuffs available. Usually, such policy has been based on a projection of the anticipated economic effects. However, projections of the nutritional effects (particularly on the vulnerable groups) which may have a greater accumulative influence on economic development, have to date been utilized little in considerations leading to the establishment of food policy. Economists have access to very little of the necessary information

on which much projections would need to be based.

CFNI through the (a) compilation of data on food availability and consumption within the family unit, and (b) definition of the etiology of malnutrition in the Caribbean setting, proposes to extend this information into the area of food policy.

(4) ASSESSMENT OF MALNUTRITION AND PREVENTIVE PROGRAMS

Various forms of malnutrition, including anemia of pregnancy, obesity and dental caries, are problems in the area, and will be studied by field investigations.

The major nutritional problem of the area appears to be protein-calorie malnutrition of early childhood (PCM), especially the marasmus-diarrhoea complex, and mild-moderate degrees of PCM.

Major emphasis will be given to methods of assessing the prevalence and etiology of PCM in Caribbean communities, in order to have a clearer idea of the present situation and to be able to measure and evaluate the most locally suitable preventive programs.

The approach to problems of malnutrition will be in three main ways: (1) assessment of the prevalence, (2) investigation of etiology, (3) assessment of preventive and promotional programs.

With regard to the main problem (PCM), this will include:

- (a) Prevalence review of literature, collection of vital and health statistics, rapid community surveys.
- (b) Etiology pattern of infant feeding (in relation to ecological

factors and the family diet, cost-availability of foods, food production and consumption, food aid, etc.), conditioning infections, population dynamics.

- (c) Preventive and Promotion -al Programs analysis of types of program (including applied nutrition schemes, development of high protein foods and their testing for young children on a community basis, nutrition education through various channels, etc.), and assessment of the effectiveness of these programs.

(5) ECOLOGICAL FACTORS IN DIETARY PATTERNS

It is now generally recognized that thorough knowledge of the several ecological factors that influence dietary patterns will permit a more effective approach to improvement of consumption levels.

Investigations will include the study of the following:

- (a) Food production patterns at village-level, purchasing systems, storage practices, preparation methods and consumption levels.
- (b) Available facilities, equipment, resources, and time factors in the home as they affect production, preservation, storage, preparation and consumption.
- (c) Factors that operate in distribution of food within the family.
- (d) Local foods and food preparations.
- (e) Attitudes, beliefs, taboos and superstitions regarding food and disease, with particular reference to PCM.
- (f) Sociological, cultural and economic factors operating in the genesis of malnutrition.

- (g) Repercussions on family dietary of rapidly increasing trend toward mothers' employment outside the home.
- (h) Effect of seasonal and intermittent employment on dietary patterns.

(6) MATERNAL - CHILD NUTRITIONAL INTERDEPENDENCE

Recent work in developing regions has increasingly stressed the need to consider the mother and young child as a single physiological unit - a realization of great importance in public health nutrition programs, including food aid, nutrition education, etc.

Field investigations would be undertaken into anthropometric inter-relationships between the pregnant women and their subsequent newborn, and into the present situation concerning lactation performance in the Caribbean and possible technics to improve matters.

(7) NUTRITIONAL IMPLICATIONS OF FOOD AID

Too often food-aid schemes are viewed as certain means of conferring nutritional improvement. Not nearly enough information has been sought either as to concrete benefits accruing, or as to response from recipients to food aid, utilization of foods, "true" beneficiaries, and possible disruption of desirable practices in agriculture and food consumption. Additional ways and means of incorporating these elements into food-aid programs will be studied.

(8) MENTAL DEVELOPMENT AND MALNUTRITION

Especially in view of the economic importance of a highly educated population for rapid technical development, the inter-relationships between PCM and possible subsequent mental retardation needs further study in different communities in the world.

Some circumstances in the Caribbean appear to facilitate investigations of this type, including language, exact knowledge of age and the commonness of early infantile malnutrition (when the brain may be more susceptible to damage).

(9) INTER-ACTION OF NUTRITION AND INFECTION

In addition to investigating the part played by infections in the etiology of PCM, more detailed studies are proposed into other aspects of the relationships between infections and nutritional status, in particular the interaction between nutrition, diet, environment and diarrhoea (e.g. local variants of "weanling diarrhoea"), and into the possible impairment of immunity in undernourished children and its relevance to immunization programs.

(10) FOOD PRODUCTION AND CONSUMPTION OF RURAL FAMILIES

Since a high percentage of the population in the Caribbean countries live in rural areas, it is important not only to assess the current nutritional status of rural vs. urban families, but also obtain baseline information on the types and amounts of food produced and consumed by rural families.

Field investigations of this type would assist in defining:

- (a) the nutritional implications of difference in food production and consumption of the (i) agricultural laborer, (ii) subsistence farmer, (iii) small commercial producer of food crops, and (iv) small producer of export crops;
- (b) possible changes in food habits of rural families participating in governmental and privately-sponsored programs of land development, land reform, agricultural credit and marketing schemes;
- (c) the extent to which programs encouraging livestock production also improve the diet of the farmer's family;
- (d) the influence of nutrition education to children (via school lunches, class-room instruction, etc.), on the food production and consumption practices of the family;
- (e) whether programs to achieve improved nutrition in rural areas should be primarily oriented toward the home, toward the family food producer, or be a combined approach;
- (f) if educational programs, unsupported by economic assistance, are effective in bringing about permanent changes in food production patterns, and if food production and consumption patterns of backwoods families vary appreciably from those in more accessible areas.

These data could assist in the orientation and evaluation of the effectiveness of numerous activities which have the objectives of increased agricultural production and improved living conditions of rural families.

(11) ATTITUDES TO AGRICULTURAL CHANGE

The limited success of government-sponsored agricultural programs in some circumstances has been traced to insufficient appreciation of the attitudes of the farmers to whom the programs were directed. In a region such as the Caribbean, where agricultural producers are influenced by such diverse ethnic, cultural, political and ecological backgrounds, it is extremely important that information be available regarding the attitudes and felt-needs of agricultural groups. The CFNI hopes to assist in bringing about the adoption of desirable agricultural production practices in the Caribbean through the accumulation of information concerning the outlook and attitudes of farmers and rural laborers.

(12) NUTRITIONAL IMPLICATIONS OF "MODEL" FARMS

In several of the Caribbean countries, government and private enterprise-supported efforts to increase agricultural production include "model" farms established within land development, land reform and agricultural credit schemes. The farmers participating in these schemes usually are, (a) selected on the basis of aptitude or interest, (b) receive training and/or supervision, and (c) receive substantial credit assistance (often including land and a new home) all of which should be mutually reinforcing with reference to guiding and encouraging the farmer to adopt improved farming practices.

The primary objective of these programs is to stimulate economic development. Such schemes may also produce important secondary benefits, namely by stimulating the participating family to improve their standard of living (including nutrition). Responsive families, by serving as examples, may have a beneficial influence on neighbouring families and the entire community. Thus, schemes based on model farms, by serving as foci for basic improvements within the entire community, may have a "multiplier" effect which far outweighs the more easily identifiable increase in agricultural production.

CFNI proposes to assist in assessing the nutritional and social benefits of "model farms" schemes, by identifying areas wherein profitable changes may be warranted from a nutritional point-of-view, and to obtain information which will be helpful in planning future projects wherein nutritional considerations are required as an important objective.



2

3



4

5



A N N E X : II

PROPOSED CFNI PROJECT

- "PCM EVALUATION UNIT" -



1

2



3

4



PROPOSED CFNI PROJECT: PCM EVALUATION UNIT

REASONS FOR PROJECT. From papers published over the last twenty years, one can piece together in general terms information concerning childhood malnutrition in the Caribbean as a hospital problem.

However, very few community studies have been undertaken and these have been made by many different authors using various methods. They are piecemeal and difficult to repeat on a wide scale because of this.

The only uniform solid data available regarding malnutrition are the infant and 1-4 year mortality rates, and even these are not available for every country for every year^{*}. Moreover, besides dealing only with a small part of the problem, they are rendered less useful and more conservative than they ought to be by inadequacies in the classification of nutritional disease, as evidenced by the need for the current PAHO study, Child Mortality in the Americas.

If exact and uniform data concerning community nutritional status in each island or district existed:

- (a) it would make possible inter-island or inter-district comparisons, thereby facilitating identification of factors contributing to malnutrition.
- (b) the baseline knowledge which would come from the analysis of such data would be most valuable in planning nutrition programs,

^{*}see various WHO and PAHO vital statistical publications.

especially when positive correlations are found between varying levels of nutritional status and varying socio-economic circumstances and levels of food availability. Such correlations assist in determining which groups need special attention;

(c) not only is comparison possible geographically and between socio-economic groups, but, perhaps even more important at present, the study would make possible comparison between one time and another, between the present and future. Such comparison is quite essential for the evaluation of all programs directed towards improving the nutritional status of the community including the various types of Applied Nutrition Programs already in existence or planned in the area:

(d) there is at present a vague general awareness by policy-makers of the existence of the nutrition problem, but little knowledge of its precise extent, particularly its extent as regards chronic marginal malnutrition in young children, as opposed to acute overt malnutrition of the kind requiring urgent admission to hospital.

Dissemination of the data from this proposed project would be of great value in that it would give a far more accurate and quantitative knowledge to professional groups (in health, agriculture, community development and education), to the teachers of these professional cadres, to administrators, to policy-makers, and to the interested and influential section of the public.

A real awareness of the precise extent of the problem and of socio-economic and food availability factors related to different

degrees of community malnutrition could be expected to have beneficial results in the better conduct of existing programs and the stimulation of new efforts.

(e) on a wider plane, the techniques developed, tested and proven by the proposed "PCM Evaluation Unit" would be expected to have relevance for other developing regions. In particular, rapid anthropometric tests independent of precise age can be evaluated for use in parts of the world where birth verification is unusual

THE COMPONENT CLASSES OF DATA REQUIRED

1. (a) Clinical and particularly anthropometric examination of a carefully - chosen sample of all the approximately 720,000 0-4 years old children in the area. Large percentages affected will enable future changes to be more easily detected and more positively identified.

(b) a gathering at source of related vital and health statistics.

2. (a) Linked with this survey to a degree sufficient to establish correlation, a concomitant enquiry into the socio-economic circumstances of the families from which the children examined are drawn;

(b) a food consumption survey of a sample of the sample.

3. Data concerning food availability, both as regards home production and food and nutrient prices related to income, (a) embracing the whole island or district, and (b) also linked to the families of the children examined.

In general, a superfluous complexity of data is to be avoided,

for it is important that within any island or district in the future it must be possible to repeat the study exactly for evaluation purposes.

STAFF REQUIRED. The nature of the data required suggests that the staff should consist of:

1. A public health physician/pediatrician, of suitable qualifications, experience and field of interest.
2. A sociologist/home economist likewise qualified and experienced in developing countries.
3. An agriculturist/agronomist.

The Caribbean Food and Nutrition Institute is the only inter-territorial body in the nutritional field with sufficient experience of the area and contacts with relevant authorities and technical resources to provide a context within which this "PCM Evaluation Unit" can work, with similar experience.

SAMPLING. A short-term consultant in statistics will be required at the very outset of the project for one month to advise on the precise details of sampling, data collection and data processing. At this stage one would only suggest provisionally that

- (a) the sample should be stratified geographically according to the 0-4 year group population of the islands and districts;
- (b) for satisfactory analysis the subdivisions of the sample must be of a certain minimum size determined by the expert advice;
- (c) within the geographical stratifications the sample should be as close to a random sample as circumstances permit. Preference should be given to true randomness over magnitude of sample, and the

temptation to examine volunteers only be resisted. In view of recent malaria eradication programs throughout the area, it is probable that detailed maps or lists of dwellings will be available, which when up-dated will facilitate random sampling.

DATA ANALYSIS. An important function of the short-term consultant statistician would be to devise a computer program. This would enable the data to be processed concurrently with collection on the IBM 1620 machine at the University of the West Indies campus at Mona, Jamaica, and analysis would be completed within a few weeks of the end of data collection. Rapid data processing is necessary if the time schedule (see below, 8) is to be followed.

TIME SCHEDULE. With a two year contract, allowing over the two years 12 weeks of leave, four weeks of public holidays, four weeks for orientation and making contacts, and four weeks for planning details of data collection and processing, there will be eighty working weeks available or 400 days. Of these 250 could be spent in actual field work, some 30 to 50 in travel, and 100 - 120 in interpretation of processed data and writing up of the reports.

Provided that an adequate amount of local assistance is obtained it should be possible to examine a one per cent sample of the 720,000 children aged 0-4 years in the area.

With a longer contract, assessments may be carried out at intervals to gauge changes in community levels of food and nutrition, and to evaluate preventive programs.

A N N E X: III

PROPOSED CFNI PROJECT

"POPULATION NUTRITION UNIT"

PROPOSED CFNI PROJECT: POPULATION NUTRITION UNIT

REASONS FOR PROJECT. The Caribbean area is currently characterised by a very high rate of population increase, with most countries showing a birth rate of between 30 and 45 per 1000. The special importance of this to problems of food and nutrition in this island chain is plainly because of the increasingly limited land for agriculture and because of the present uneasy reliance on imported foods.

Community nutrition problems in young children also appear to be related to the high level of illegitimacy, to close child spacing, and, importantly, to the commonness of highly unstable "single-parent" matrifocal families, with consequent increased probability of inadequate feeding and supervision of young children by working mothers.

Also, various forms of population movement are of relevance in moulding community levels of food and nutrition. These include intra-island migration of the rural-urban type, inter-island migration (from small to large), and overseas migration to the USA, Canada and the UK.

All appear to have a variety of impacts on the food and nutrition situation, including, for example, a decreasing pool of agricultural workers, lack of paternal support for families, increased demand for urban-style foods etc.

Lastly, current attitudes to child spacing, child rearing and feeding, and family size (and its limitation) are related to the

status of nutrition and availability of food in the community.

RESEARCH PROPOSED. The suggested Population Nutrition Unit would be concerned with the scientific investigation of these inter-relationships, with a view to devising appropriate preventive programs. Its relevance to the contemporary scene is plainly indicated by governmental support to family planning associations in the majority of the Caribbean countries.

Notably, a demographic approach would be employed to correlate aspects of population increase (birth rates, mortality data, migration statistics), with food availability and consumption, and with the nutritional status of the community, especially the physiologically vulnerable groups.

The Caribbean countries are in urgent need of this type of information. In some senses, they are at special risk because of their historically linked dependence on imported foods and because of their economic dependence on an uncertain tourist industry and on a limited range of cash crops, most of which show a world over-production and undependably fluctuating prices.

The need is great for scientifically guided national and effective food and nutrition programs with major concern given to the necessity for the Caribbean countries to solve their own "food vs. mouths" problem by increased local food production of suitable quality and by locally relevant and acceptable family planning programs.

In addition, correlations between family size, child spacing and methods of child rearing, and family food consumption need to be investigated precisely, as do the effects of both upon fetal, child and maternal nutrition, including lactation performance.

Lastly, various sociological aspects of the inter-relationship of food and nutrition, and family planning are in urgent need of research, including attitudes towards family size and parental responsibility for child feeding, the group dynamics of various bodies involved in both activities (including national food and nutrition committees), and methods of motivation to limitation of family size based on food and nutritional considerations.

Plainly, research in these matters would have to be undertaken in consultation with a variety of groups and individuals working in the area in international, national or local organizations, particularly those engaged in demography, epidemiology and family planning itself.

STAFF REQUIRED. The nature of the information sought indicates that the following staff will be needed for this unit.

1. A public health physician with experience in developing countries of nutrition and MCH Services, especially Family Planning Services.
2. A sociologist or social anthropologist with experience in developing countries, and if possible with past work in the field of education or agriculture or health.
3. A demographer/statistician with interest in the relationship between land and its people, or a geographer whose special field is human ecology and demography.

LOCATION. It would be best if the proposed Population Unit could be located at the CFNI Trinidad Center. The reasons are:

- (a) The Unit would plainly have to work in the closest collaboration with the PAHO Zone I Health & Population Dynamics Adviser, who is stationed in Trinidad.
- (b) The Unit would be within easy distance of Barbados, where one of the most outstandingly successful Family Planning programs operates. (In Barbados the birth rate has fallen over the past 13 years from 34 per 1000 to 25 per 1000). They would thus be able to visit easily both Barbados and other countries and islands in the CFNI area where the birth rate remains between 30 to 40 per 1000 and in some cases more. From Trinidad more easily than from Jamaica they cannot only make these comparative studies but also assist in communicating the experiences of Barbados to several other islands in the area, including Trinidad itself, whose governments view with concern their own population growth rates.
- (c) The field work of the Food Policy specialist soon to join the CFNI in the Trinidad center would be closely complementary to the special field of the Unit and this to work from the same base would be beneficial.