CAJANUS

The

Caribbean Food & Nutrition Institute

Bi-monthly

INDEX

VOLUME 10

1977

Published by

The Caribbean Food and Nutrition Institute
Jamaica Centre, P.O. Box 140
Kingston 7, Jamaica

Our second Index (Vol. 9, 1976), compiled according to the present format, elicited some very positive comments from users, so we have decided to keep to this system. However, as we are constantly trying to improve we would like suggestions as to how it could be made into a much more efficient tool for extracting information from *Cajanus*.

THE EDITOR

SUBJECT INDEX - CAJANUS, VOLUME 10, 1977

AUTHOR/TITLE INDEX - CAJANUS, VOLUME 10, 1977

KEY

Article	(AR)	Newspaper Clipping	(NC)
Book Review	(BR)	Press Release	(PR)
Editorial	(ED)	Report	(RR)

Page

C (cont'd)

FROM THE EDITOR

SMALL ANIMALS

> *"Meat is a more concentrated protein than plant, and eating meat cuts down the bulk and the time spent in eating by two-thirds. The consequences for the evolution of man were far reaching. He had more time free, and could spend it in more indirect ways, to get food from sources...which could not be tackled by hungry brute force."*
>
> *J. Bronowski*
>
> *From "The Ascent of Man"*

For the developing countries of the world finding solutions to the problems of hunger and malnutrition remains one of their foremost challenges. Whether nutritionists choose to define these problems in terms of protein, calories or other nutrient measurements, the basic need in the eyes (or is it bellies?) of the majority of people is for more food.

Man's pattern of eating has a strong basis in the traditions and culture that are part of his total environment. His habits of food production are intimately related to these eating patterns and are themselves subject to traditional and cultural influences. Food production practices clearly owe a great deal to modern technological and other advances; at the same time, however, they may have suffered reverses because of industrial, urbanising and social forces that have had such a major impact on today's man.

Mounting economic pressure in the developing countries, therefore, makes the quest for greater self-sufficiency in food more of a compulsory undertaking than a casual challenge. Our ingenuity as producers of food must be fully exploited, and, in so doing, we must not only pander to our existing food-likes, but carry the test of innovation to our conservative taste buds.

It is surprising how little attention we seem to have given to the rearing of small animals especially goats and rabbits. Has this been determined by tradition or have some other adverse influences been at work? In recognition of the significant benefits we believe the renaissance of rearing small stock can bring to our food production and consumption, we include in this issue an authoritative article on rabbits as food and other thought-provoking pieces on goats, sheep and pigs.

We need our national and regional food and nutrition plans, but, at the same time should we not do more at the household and individual level towards the goal of greater self-sufficiency?

Shouldn't we think seriously about those goats and rabbits?

THE EDITOR ▲

"...in the next decades we may see not only a disappearance of food aid, but also a collapse of the international grain market. This can only mean that those countries which do not start now to make themselves totally self-sufficient in food supplies are simply doomed."

- Edward Goldsmith

"The Ecologist", 6:4:127.

FROM OUR READERS

THE EDITOR, CAJANUS

Dear Sir/Madam:

Cajanus seems to get more interesting with every issue. It is good to hear of the work being done in Jamaica to improve the standard of nutrition of the poor people.

Some time ago I read that a small quantity of cocoa decreased the absorption of protein by the body to 30% - I cannot trace where I read this - but if it were true it might be a significant factor in protein malnutrition, might it not? Has any work been done on cocoa in the Caribbean?

Pamela Tate
Grenada

Editor's Note: We can find no pertinent reference in the literature on the effects of cocoa on the absorption of protein. The only diet constituent that may be affected is probably calcium which can be bound by oxalic acid in the cocoa. We rather doubt that cocoa has this adverse effect on protein absorption.

I continue receiving your invaluable publication CAJANUS which informs us about important nutritional issues and helps us in solving many practical problems. I congratulate you on your efforts.

Dr. Leonardo Mata
Costa Rica

I am a citizen of Guyana who hold a B.Sc. in Agriculture from McGill University and an M.Sc. in Food Science from Michigan State University. I am currently working towards the Ph.D. degree in Nutritional Sciences at the University of Illinois at Urbana, U.S.A.

I am able to read CAJANUS whenever it is accessible. I have found it to be generally informative with regard to the status of the field of food and nutrition in the Caribbean. I believe the quality of the publication has been improving and look forward to its further improvement.

Patrick R. Hill
Urbana, Illinois, U.S.A.

Thank you very much for your letter of 18 May sending Volume VIII of the CFNI Newsletter 'Cajanus'.

The new format is certainly more functional than the previous one. The two indexes are very useful indeed to help to identify material when needed. Only a small comment. The paper utilized seems to me very luxurious. Considering prices and the fact that wide diffusion is the main objective, you might want to consider other types of paper will be suitable and utilize the "savings" for a larger edition.

Congratulations on the improvement and best regards.

Victor Soler-Sala
UNICEF, Colombia

Thank you very much for sending us a copy of Volume VIII (1975) of "Cajanus". As always we found the publication very useful for its well selected articles on a variety of subjects and other useful informative material. The new format is a more practical one and it is easier to handle. We particularly appreciate the efforts put in preparing an Author/Title index, as this is not an easy task but increases significantly the usefulness of the volume as a reference material.

Thank you again for your courtesy and best personal wishes and regards.

Dr. M. Behar
Switzerland

From time to time I have received copies of CAJANUS, and have always found the articles very informative and useful, especially as this Centre is deeply involved in the fight against malnutrition.

In this connection, we would like to request that the Centre be placed on your regular mailing list so that we may receive copies of CAJANUS as when they become available.

Rita A. Riviere
Dominica

My friends and I were amazed at the many uses of pigeon pea - Cajanus, Vol. 9, No. 3, 1976. But!! Did you know the green shells (pods) can be used to make wine??

This recipe was given to me by my neighbour. I tried it and believe me, it's potent:

Ingredients

2 handfuls green shells (pods)

2 pts. water

1½ lbs. sugar

a piece of spice and a few cloves

Method

Sweeten water. Wash pods and add along with spices to water. Cover in a jar and leave for 21 days. Strain and bottle.

N.B. Do not use glass jars. These tend to explode during process!

I do hope to hear from you or of your efforts in wine making.

Sheila Wharton
Guyana

Everyone has 'his taste' and from infancy until death he concerns himself with seeking and enjoying the kinds of food that are most pleasurable to him.

- *H.B. Moore*

In "Psychologic Facts and Dietary Fancies"

J. Amer. Dietet. Assoc. 28 (789), 1952.

TOPICS AND COMMENTS

GOING...GOING...GONE METRIC?*

Editor's Note:

The Metric System is surely, if somewhat slowly, gaining wider and wider usage throughout the world. Its introduction into the countries of the English-speaking Caribbean already seems inevitable, though not imminent.

The following information on the Metric System should, therefore, be of interest to our readers who must some day (soon?) be thinking in terms of kilograms of beef, decilitres of milk, and hectares of land.

BIRTH OF THE METRIC SYSTEM

Some 100 years after the idea first surfaced, in the midst of the French Revolution and shortly after the American Revolution, the metric system was born.

It was the 1790's and government leaders on both sides of the Atlantic were anxious to replace the confusing array of weights and measures handed down by the Greeks, Romans, Anglo-Saxons, and Normans. In the new United States of America, George Washington spoke of the need for a standardized system of measurement; Thomas Jefferson later actually proposed one based on the swing of a pendulum; and John Adams weighed alternative forms of measurement in probably one of the nation's first economic surveys.

But it was the French, despite their preoccupation with the Revolution, who came up with a workable system that would eventually find almost universal acceptance. The new metric system was launched in 1790, when the French Academy of Science moved to carry out proposals of the French statesman Talleyrand.

---

*Adapted in part from Foreign Agriculture Service, US Department of Agriculture, Volume XIV, Number 36, 1976.

Provisional standards for the new system were adopted in 1795, and these were introduced to other nations at the end of the century in an international conference held in Paris. Some resistance subsequently set in, delaying France's official acceptance of the metric system until 1840, when its use was made compulsory.

Thereafter, the system spread rapidly throughout Europe, and then to other nations of the world. By 1900, 35 nations were using the metric system and in December 1975, the United States became the last developed nation to decide to go metric.

COMPARISON BETWEEN ENGLISH/COMMON AND METRIC UNITS

Although authorities agree that ultimately "thinking metric" will be the key to successful conversion, a comparison between English/Common and metric units can help the visualization of the latter. The metric units are:

metre - measure of length
gram - measure of weight
litre - measure of capacity
are - measure of area

The information about smaller and larger units is:

Prefix	Symbol	Power	Meaning
kilo	k	10^3	1,000
hecto	h	10^2	100
deka	da	10^1	10
	1 metre	1 gram	1 litre
deci	d	10^{-1}	.1
centi	c	10^{-2}	.01
milli	m	10^{-3}	.001
micro	μ	10^{-6}	.000001

Since a gram is about the same weight as a paper clip, a milligram (mg) is about 1/1000 of a clip.

An ounce is about 28 grams. A kilogram (1,000 grams) is about 2.2 pounds.

A litre is about five percent more than a quart, and a millilitre (ml) is 1/1000 of a litre. A quart of milk could be labelled with the supplementary metric declaration of "946 ml". Metric measuring cups will be graduated in millilitres (ml) up to 250. This is slightly more than the English cup, which measures 237 ml.

METRIC MEASUREMENTS AND THEIR ENGLISH/COMMON EQUIVALENTS

Metric Measure	Size*	English/Common Equivalents
Length:		
Myriametre	10,000 metres	6.2137 miles
**Kilometre	1,000 metres	.62137 mile
Hectometre	100 metres	328 feet 1 inch
Dekametre	10 metres	393.7 inches
**Metre	1 metre	39.37 inches
Decimetre	.1 metre	3.937 inches
**Centimetre	.01 metre	.3937 inch
**Millimetre	.001 metre	.0394 inch

*In terms of the standard metric units - metre, square metre, gram, and litre.

**Metric measurements most commonly used.

Metric Measure	Size*	English/Common Equivalents
Weight:		
**Metric ton	1 million grams	2,204.6 pounds
Quintal	100,000 grams	220.46 pounds
Myriagram	10,000 grams	22.046 pounds
**Kilogram	1,000 grams	2.2046 pounds
Hectogram	100 grams	3.5274 ounces
Dekagram	10 grams	.3527 ounce
**Gram	1 gram	15.432 grains
Decigram	.1 gram	1.5342 grains
Centigram	.01 gram	.1543 grain
**Milligram	.001 gram	.0154 grain
Capacity:		
Kilolitre or stere	1,000 litres	1.308 cubic yards
Hectolitre	100 litres	2.838 bushels; 26.417 gallons
Dekalitre	10 litres	1.135 pecks; 2.6417 gallons
**Litre	1 litre	.908 dry quart; 1.0567 liquid quarts
Decilitre	.1 litre	6.1023 cubic inches; .845 gill
Centilitre	.01 litre	.6102 cubic inch; .338 fluid ounce
**Millilitre	.001 litre	.061 cubic inch; .271 fluid dram

*In terms of the standard metric units - metre, square metre, gram, and litre.

**Metric measurements most commonly used.

Metric Measure	Size*	English/Common Equivalents
Area:		
**Hectare	10,000 square metres	2.471 acres
Are	100 square metres	119.6 square yards
Centiare	1 square metre	1,550 square inches

*In terms of the standard metric units - metre, square metre, gram, and litre.

**Metric measurements most commonly used. ▲

CONVERTING IS EASY!

To Change	*To*	*Multiply By*
Length:		
Inches	*Centimetres*	*2.5*
Feet	*Centimetres*	*30*
Yards	*Metres*	*0.9*
Weight:		
Ounces	*Grams*	*30**
Pounds	*Kilograms*	*0.45*
Capacity:		
Teaspoons	*Millilitres*	*5*
Tablespoons	*Millilitres*	*15*
Fluid Ounces	*Millilitres*	*30*
Cups	*Litres*	*0.24*
Pints	*Litres*	*0.47*
Quarts	*Litres*	*0.95*
Gallons	*Litres*	*3.8*

**The precise figure is 28.25. However, some find it more convenient to use 30.*

NEED TO PUSH GOAT, SHEEP, RABBIT REARING*

By C. Roy Reynolds

About three years ago an agricultural re-discovery was made in Jamaica - sheep, goats and rabbits could play a role in livestock development.

GOATS

Of these three types of what have been conveniently called, minor livestock, the goat is decidedly the most popular in Jamaica. Not much has been written on how this came to be so, but the fact is that Jamaicans are among the world's foremost eaters of goat's flesh. This must be the only nation on earth where if most of the population hear the word *mutton* the logical association is goat.

It is curious that an animal, the meat of which is so widely acceptable, and indeed sought after by the Jamaican palate, has received so little attention over the years. A look at the livestock history of Jamaica shows clearly that its official administration has not been very concerned about the development of the goat industry. At times this attitude has even bordered on hostility. Goat rearing received the same scant attention accorded to the domestic food production in the hands of the peasants.

Goaded by the disastrous events of 1973 when the imported feed situation seemed to threaten the major livestock industries, a new interest began to develop in goats. By then any pretence at technology which had existed in earlier generations was forgotten, and proper management of goats was a mystery.

But though this interest exists the technology on which to build a modern goat industry is conspicuously absent.

**From The Jamaica Daily News, 28 September 1976.*

The Agricultural Development Corporation (ADC) seems to be concentrating most of its attention on the establishing of a number of multiplier units where breeding stock can be built up for distribution to farmers. The Ministry of Agriculture's contribution appears mostly confined to the planning of the Fellowship-Friendship Goats and Sheep Project under the umbrella of its Land Lease programme.

Naturally, any development which is expected to involve large numbers of small farmers must come through the Ministry of Agriculture. So it might be interesting to get an insight into its thinking. This may be provided through a glance at the abovementioned project. A document on it said: "At the present time the goat population of Jamaica is in the region of 200-300,000 animals. Goat rearing in Jamaica is primarily a small farmer operation. Management is poor to nonexistent and goats are left to roam in the wild state to fend for themselves."

"Goat rearing in Jamaica is primarily a small farmer occupation."

This of course testifies to the neglect the Industry has experienced. While goat rearing here can be appreciably expanded, and can benefit greatly from an improvement in management and technology, there are some glaring omissions in the development rationale. To say that there are 200-300,000 goats is really to admit that we don't have a clue.

There is no indication of the potential consumption of goat's flesh, and even less on milk. How can the hides be used to provide a useful addition to income? And what of a marketing or distribution system? These are vital considerations that must form part of any rational or serious development programme.

SHEEP

As far as sheep is concerned the efforts seem to have much more "respectable" overtones. Breeding and management research is proceeding and there have been substantial imports of new block stock. It has even been estimated that we will have to import about 1,000 animals a year for the next several years to build the Industry to presumably the right size.

Yet despite the seeming aura of respectability that is being bestowed on sheep, it has far less potential at present than goat. True we have had to import almost all of the mutton we consume. But it is also true that we do not have a tradition of mutton consumption and what little we use is confined mostly to the tourist trade. So any bias towards the development of a sizeable sheep industry would seem to suggest the need for stimulating local taste for mutton.

Another factor that appears to favour goats over sheep is the fact that Jamaican farmers have had a very long tradition of rearing goats. While it is perfectly true that management may be poor to nonexistent, it is true that our farmers have shown a deep

and abiding interest in goats. So there is not much difficulty in persuading them to raise goats. Sheep, on the other hand, is a brand new game to them and even if breeding stock is available there is no guarantee that it will be taken up.

"...any bias towards the development of a sizeable sheep industry would seem to suggest the need for stimulating local taste for mutton."

RABBITS

Rabbits too, are somewhat alien to the experience of most of our farmers. The other drawback from which rabbits suffer is the non-tradition of rabbit eating here. So the level of consumption is something that can only be guessed. It might be that the low consumption level has been due to nonavailability of the meat in any significant quantities, but whether this is so or not no one knows.

At the moment it appears that there will be little headway in building a sizeable rabbit industry if consumption is not stimulated simultaneously. One encouraging sign is that the presentation of rabbit meat in retail outlets has been markedly improved in the past year or so. Hitherto the presentation was a decided disincentive to consumption.

When the Rabbit Producers Association was set up in 1974 enthusiasm was high. Members were told that a survey indicated that there would be a market "for all the meat that your organization can produce within the foreseable future." Optimism was also expressed in the possibilities of commercial use for the pelts.

Unfortunately, over the intervening time there seems to have been a decided cooling off of enthusiasm, proving perhaps that enthusiasm by itself can accomplish very little positive results.

Yet, it appears that rabbit has much to recommend it. Its meat is one of the most nutritious, it can produce about ten times its weight in meat in a year, and has a gestation period of just 31 days. Additionally, it is quite suited to small-scale operations where land space is limited.

But like goats, rabbits suffer from a benign neglect from the higher levels of livestock administration and research. Their very size seems to have consigned them to the bottom of the ladder of concerns. Perhaps, as the economic viability of other branches of livestock, such as beef cattle, is called more and more into question, these humble poor relations will be given some greater degree of respectability. ▲

PLACING EMPHASIS ON NUTRITION*

The second in a series of workshops to do with food economics and food and nutrition planning held at the Wildey Conference Centre (Barbados) was designed to increase the knowledge of senior personnel involved in food economics and nutrition, with a view of helping them to better evaluate food policies.

With the growing emphasis being placed on regional food plans this approach is imperative if we are to produce food to meet the nutritional requirements of our people. The aim is not merely quantity but quality as well. Not just a bellyful but balanced eating.

It has been said that a man is what he eats. This comes through clearly in the nutritional needs of children who from early show signs of malnutrition if their growing bodies are not provided with proper foods. Their nutrition influences their growth and it is known that it also bears some relation to their mental capacity. Studies are now going on to give a better understanding of the relationship between the food and nutrition our children receive and the growth and increase of their brain power.

But while there is much concern about malnutrition in children its adverse effect on the performance of adults is not always emphasized. In fact, if our workers are to become more productive, there must be a combination of many factors of which proper nutrition is an important one.

Efforts have been made, and are continuing, to encourage our people to pay a lot more attention to their nutritional needs. They are exhorted to realize that there is more to good and wise eating than just developing a taste for certain foods. They are

---

**From the Advocate-News, Barbados, 8 November 1976.*

shown how within their own environment they can produce a variety of foods to meet day to day nutritional needs. And though these needs might vary with age they can be neglected only to our detriment.

In this respect Barbados has been fortunate in the efforts made by the Agricultural Development Corporation (ADC) through its Food Promotion Officer, to stimulate interest in locally produced food and dishes. The nutritional value of many food items literally found on our doorsteps has been emphasized in the Corporation's programme. Recipes have been produced to make the preparation of familiar food items more attractive and tasty.

The impact of eye appeal, apart from taste, as encouragement to prefer certain foods is similar to the eye-catching packaging that has helped certain food products to become household words. But an understanding of nutrition makes it possible to realize that there is more to nutrition than attractive packaging. In some countries food processing, food packaging and the production of patented food products is a big industry with heavy competition, inspiring at times outlandish claims. Machinery has had to be set up to ensure that claims often made by a number of these food firms can stand up to research and are not merely calculated to mislead the buying public.

But it takes an awareness on the part of the public to support such scrutiny. Even where consumer groups are active they must have among their membership people who understand what the whole business is about. Whatever might be Government policy to protect the consumer, the alertness of the consumer is a first line of protection.

A society that is cognisant of nutritional needs can better appreciate certain aspects of a planned food policy and will be encouraged to see food value, beyond the many enticements to which it is known many consumers are prone.

FOOD COMPOSITION TABLES*

By Roslyn B. Alfin-Slater and Derrick B. Jelliffe

Today's knowledge of food nutrient composition makes it possible to now list nutrients that have become important as particular needs have changed. For example, in the 1930's the discovery of insulin focussed attention on the dietary treatment of diabetes so that more emphasis in food composition tables was given to the carbohydrate content of foods.

More recent concern with the dietary control of heart disease has led to the analysis and inclusion in food tables of cholesterol and fatty acid levels, as well as types of fatty acids in foods. Similarly, the need to consider home-prepared or processed infants' formulas containing all the essential amino acids stimulated the analysis and incorporation of amino acid composition in many modern publications. In the future, data on the fibre content of food will undoubtedly figure more prominently.

Many popular, simplified food composition booklets have been published in recent years; most of these show the caloric contents of the more common foods, including that of usual portions.

LIMITATIONS

Food composition tables have become basic tools of the trade for nutritionists and dietitians, but the limitations of these tables must be realized. They give only approximate results. Sometimes these are based on very few actual analyses of samples and often are reprinted from another source. There is only limited recognition of the natural differences in the composition of foods, in various parts of the world, with genetic variations

---

*Reproduced from Los Angeles Times Home Magazine, 11 July 1976.

and with differences due to soil, fertilizer and irrigation. For example, the content of ascorbic acid in citrus can vary in different places.

Also, the fact that a food contains a particular level of a nutrient when analyzed in a laboratory does not mean that all of the nutrients will be available to anyone or everyone who eats it. In fact, the availability of nutrients varies greatly with the form in which they are found and the way they are prepared. For example, the iron in cereal grains is not well absorbed because of the presence of phytates, which interfere with iron absorption.

In addition, although separate items may be eaten, they are mixed in the alimentary canal or actually consumed as cooked mixtures so that our gastrointestinal tract is presented with mixtures of foods. It is increasingly clear that the content of the mixtures as they present themselves in the intestines influence the absorption of the nutrients they contain. Again considering iron, more is absorbed from vegetable sources of this mineral if some animal product is eaten at the same time.

CHANGES FROM COOKING

Other obvious problems with the use of usual food composition tables are the changes that occur with cooking. In terms of weight, this may increase with boiling, e.g., rice, or decrease with roasting, e.g., meat. From a direct nutritional point of view, nutrients may be lost by heat destruction or by leaching into the water used for boiling; other foods may be made more digestible by cooking so that more nutrients may be available as a result.

USES

Food composition tables can be very useful as approximate guides to the nutritional values of diets of populations as well as individuals. They can be used, for example, to assist in assessing the intake of nutrients in a community, if a diet history has been taken. They can be used for planning individual diets for subjects with special needs, such as those requiring restricted calories or low-cholesterol menus. They can be employed as a guide for planning food needs for a nation, or for an institution such as a penitentiary or a nursing home, or any specialized group of individuals. As with all guides to better nutrition, their practical value is increased if their imperfections are appreciated. They offer rough assistance of great value to the layman, rather than ultrascientific precision. ▲

To introduce adequate nutrition, it is most important to bring about changes that are in keeping with the established food habits of the people, and are acceptable within the framework of their value system.

- M. Mead

"Cultural Patterns and Technical Change"

UNESCO, Paris, 1953.

THE CHALLENGE OF NUTRITION EDUCATION IN THE CARIBBEAN*

by

A.C.K. Antrobus

PERSPECTIVES ON NUTRITION EDUCATION

In the area of nutrition we have been subject to the almost profligate use of the term "nutrition education" in a manner that must surely risk consigning that discipline to bastardy. It is time that we attempt to ensure that there is a common and appropriate understanding of what is meant by nutrition education, and that a proper degree of respectability develops in association with it. In so doing, however, we need to avoid the danger of being lured into too narrow a definition of nutrition education on the one hand, and, on the other, of allowing an over-generous interpretation of 'education' to detract from the upper echelons of specialization which this field of study permits.

Nutrition education, broadly speaking, has to do with learning about the foods we eat and what they do to us, or for us, (or even against us) in terms of growth and our physical and mental well-being. In turn, the foods we eat are determined by, or at least largely influenced by, a host of other factors of which we are all very thoroughly aware. Unless a favourable influence is constantly exerted on this target area of food habits and actual eating patterns then nutrition education must be deemed to be deficient, because its ultimate goal has not been attained. This is not to deny that a number of intermediate or secondary

---

*Based on a Keynote Address delivered at the Maternal and Child Nutrition Seminar for home economists, Moneague, Jamaica, 9 August 1976. Dr. Antrobus is Acting Director of the Caribbean Food and Nutrition Institute.

goals may have been successfully achieved, but this counts for little if progress towards the final goal is not maintained. Perhaps these views can be epitomized in the words of a saying the origin of which is obscure: "A food has no nutritional value if it is not eaten".

SOURCES OF NUTRITION EDUCATION

Our education in nutritional matters is derived from two types of sources - formal or structured teaching, actively performed, and informal or casual diffusion - a more passive process. The former, we subject ourselves to or consciously pacticipate in; the latter we are largely unaware of, as though it merely happens to us. The majority of us - the well-nourished, undernourished and overnourished alike - go through life exposed to the informal type of education only - that which derives from our parents and our peers, or filters almost imperceptibly through the media to us.

Our concern about nutrition education clearly indicates that we realize the dominance of these informal sources as influences in our nutrition life-style and the importance of ensuring that their information base is reliable. Inherent in this is our acknowledgement that one of the most promising pathways to the correction of any inadequacies in informal education is via a broader, improved system of formal nutrition education. One may therefore think of this latter approach as serving two distinct, but closely related functions:

(i) the provision of increased knowledge of nutrition and its application, for those who are directly exposed to this more structured type of education, and;

(ii) more importantly, the far wider diffusion of nutrition knowledge and practice via informal channels that must inevitably result from the whole process.

Our present age is one of unsurpassed technological achievement much of which is applicable in one form or another to both the field of nutrition and the field of education. We have seen remarkable advances in plant breeding and food technology, as well as in the systems and methods of teaching and learning. We have seen the mass media, especially radio, gain ever-increasing popularity among the people of our islands. In effect, what we have been experiencing is a self-perpetuating explosion of available knowledge and a widening of the scope for the dissemination of this knowledge. Yet we are growing progressively more conscious of deficiencies and defects in nutrition education - education for good eating, and consequently, good living. What we are faced with is an *application gap* that threatens to widen into a yawning chasm, thereby presenting us with the mammoth challenge of building bridges between ever-increasing technical knowledge and its proper use at the appropriate levels.

In answering this challenge, we need to see nutrition education, not as an esoteric subject nor even as a single entity with clearly defined boundaries, serving as an end in itself, nor restricted to banal slogans like "Grow more food", "Eat more vegetables" or "Breastfeed your baby". Nutrition education has to be more than all of these; it must be seen within the context of total national and regional development. In the Caribbean, for pragmatic reasons, nutrition education also needs to have a place within the special framework of rural development which is fast becoming one of the newer spheres of interest among international and governmental agencies, and justly so.

NEW DIRECTIONS

An essential part of the challenge at this time seems to be finding ways of broadening the base for nutrition education in as effective a manner as possible, that is, wider outreach, greater relevance, more innovative techniques and approaches. For these reasons, we are grateful to those countries of the world that have shown us that the capacity to teach and to serve one's fellowmen effectively in the fields of health and nutrition is not the prerogative of the elite professional. Maybe we have, hitherto, in our fear of the unknown, for too long clung to what we believed to be the accepted and honourable methods of rendering professional service, inherited from sources that bore little resemblance to our circumstances.

In urging that we adopt a new freshness of outlook, I would make a plea that we do not indulge in change merely for its own sake, and that we genuinely examine every new step for its relevance and practicability. At the same time I must admit that I become apprehensive when I hear high-sounding pronouncements about change that involves a radical and total swing to the grass-roots approach to nutrition problems. My fears are that this emphasis may partially blind us to the need to maintain a decent equilibrium between the various levels of function in nutrition education. A cautionary note for the nutrition navigators - "Too far east is west".

What we need, then, to set about closing the application gap is to first be convinced that "We are *not* all right, Jack" (and equally to convince the protagonists of radical change that we are not all wrong either). Let us not be too proud to borrow, nor too timid to innovate. Our starting point for action must be "motivation", and this motivation must run in three contiguous lanes - social, professional and political motivation.

Social motivation is directed towards a better life, in this case brought about by improved nutrition through better education. It is a fundamental human response to the scenes of malnutrition that surround us in greater or lesser degree, (depending, of course, on what we allow ourselves to see). We must have a desire to eliminate the nutritional ills that are a major component of the despair and misery of thousands of people, especially children, in the Caribbean.

The *professional* motivation must be as strong as the social. I perceive this as the will and the desire to perform our roles as educators with greater efficiency, more recognizable results, and even with a degree of flair that will add to the professional satisfaction after which we hunger and on which we all thrive. In short, this type of motivation is nothing more nor less than the urge to do a better job.

Political motivation, as used in this context, has nothing to do with partisan politics. It is that force which recognizes and seeks to promote the nutritional upliftment of the people of a country as a national goal, and as an essential part of total national development. Besides, it is the trigger which can most assuredly fire these combined motivational forces, and generate the energy needed to sustain the processes of thought and action on the road to achievement.

At a time when the Caribbean countries are moving towards the establishment of National Food and Nutrition Policies, and have even formulated a Regional Food Plan, there should be little doubt that there exists a great deal of the motivation required for the sound pursuit of programmes in nutrition education. After all, nutrition education is a *sine qua non* in the concept and operation of a Food and Nutrition Policy. In a situation like this there should be ample room for added professional leverage by the formal nutrition educators to secure adequate resources and support for their educational activities.

In the Caribbean we are still bedeviled by the spectre of childhood malnutrition and beset by other lesser, but nonetheless significant, deficiency problems in schoolchildren and adults, particularly women of child-bearing age, who, paradoxically, are also the greatest at-risk group for obesity and its attendant disorders.

Nutrition educators in the Caribbean have been alert to these problems and have, I think, gone a long way towards identifying the nature and the extent of our application gap in relation to their solution. We know what bridges we have to build; first and foremost, we must see to the strengthening of the practice of breast-feeding; second, the greater use of properly chosen local foods in the diets of young children; third, the wiser spending of limited money resources on foods; fourth, the improvement of water supplies and environmental sanitation; fifth, the wider coverage of the mother and child population by the health services both by better clinic attendance and by wider outreach, with special attention to immunization. Only if these bridges are strongly interlocked will the gap be effectively and securely spanned.

NUTRITION EDUCATION CAMPAIGNS

What we are attempting is, however, a relatively slow, long-term undertaking, and swifter action is sometimes needed in the short-term if the far side of the chasm is not to recede even further. It is here that the campaign approach in nutrition education has its place. There are, on the one hand, the short, snappy mini-campaigns and, on the other, the campaigns of grand design and longer duration. Each of these has its place. But we need to ensure at all times that we heed the lessons that we, as educators, learn from each campaign as we go along, so that no valuable experience is ever lost.

The real advantage of the campaign strategy is that it allows us all to focus and concentrate resources on a specific subject area. Campaign topics must therefore be selected and presented with extreme care and discretion as it is all too easy to distort the chosen subject in relation to other nutritional considerations and on-going educational activities. The proposed Jamaican venture into a National Nutrition Education/Communication Campaign promises to be an exciting educational experience on a scale that surpasses all previous endeavours in the Region. For me, the fascination lies not so much in the anticipated results, but rather more in the techniques, processes and interactions that will form the body of the Campaign.

CONTRIBUTION OF MASS MEDIA

We have so far made only cursory reference to the mass media which have reaped such a handsome share of the electronic harvest of recent years. I do not think that there is anyone present who will deny that, as a collaborative force in nutrition education, the media are capable of making an even greater contribution than is now evident. This is certainly not the place nor the time to look at the whys and wherefores of this situation. What is certain is that we need to adopt a positive stance, and search for the cooperation, support and harmony that will ensure maximum utilization of the media's capacity in nutrition education.

The Caribbean Food and Nutrition Institute feels that its Technical Group Meeting on "Nutrition and the Mass Media" held in September 1976 was one very timely mechanism aimed at achieving this end. The contribution of the media must go far beyond the sporadic droplets of accurate, practical information to successfully counter the flood-tide of misinformation and misdirections, both of which are characteristics of the channels of public education in the Region. We owe it to ourselves and to the cause we espouse to infect our media colleagues with our professional

motivation and compound it with social motivation from other committed sources among the people of the Region. Once again, however, it is important that we recognize the overriding importance of political motivation and work towards ensuring that it is present. This we can attempt to do by suggestion or persuasion, advocacy or cajolement, and, failing all these, manipulation, if that were possible (and if we know how)! But let us not be swept overboard with any high hopes of the media doing the entire job for us in the developing world. It cannot be a substitute for the more familiar and perhaps less sophisticated approaches; its place is as a handy and powerful complement. It should also be obvious that we will have to depend more heavily on reaching people via transistor radios than television sets or newspapers for a long time to come, if only because so much of our target population lives in the rural areas where many are still without electricity as a standard household amenity, and where low levels of literacy prevail.

COMMUNITY NUTRITION PROGRAMMES

There are, of course, those enterprises in nutrition education that have been launched without the benefit of media inputs. Right here in Jamaica we have witnessed interesting projects in the Salt Spring District of Hanover and in Lambs River in Westmoreland; and some admirable work has been done in the Parish of St. Thomas. Elsewhere in the Caribbean, there are very thoughtful programmes being actively pursued in Barbados and St. Lucia where the emphasis is on the education of the community as well as the schoolchild. How much do we know about these real efforts to find approaches to solving our problems? It may be with some embarrassment that we have to admit that we know very little about these endeavours.

It should, however, point to the importance of the process of self-education among the professional ranks of nutrition workers. No valid educational experiment or undertaking should escape our awareness and critical analysis. We should enrich ourselves by identifying the good and the bad elements of each, - applying what is good and eschewing the bad. Caribbean geography, with its small island units of population, offers us exciting scope for practical experimentation and operational research. It would, indeed, be a pity if we failed to put such a natural advantage to good use.

NEED FOR AUDIO-VISUAL COMMUNICATION MATERIALS

There is yet another important weakness to be found in both the structured and the informal types of nutrition education throughout the Caribbean, that is the production and availability of educational materials. It is true that here and there one can find a few posters, booklets or games that are designed to treat some aspect of nutrition. Such productions are generally small-scale and sporadic. There is clearly need for well-prepared, standardized manuals for teachers and students, basic series of posters and flip-charts, thematic slide sets, imaginative children's games, instructional booklets on special subjects, and even the interjection of nutrition messages in our talent-rich fields of song and drama.

Such a need was formally articulated among the many useful recommendations made at a Technical Group Meeting on Nutrition Education, held in St. Lucia in 1972. But where funding has to be sought and political motivation is sluggish the desired action is often delayed. It is, therefore, all the more pleasant for me to bring you the promise of the imminent appointment of a Nutrition Education Specialist based at the Caribbean Food and Nutrition Institute. High on the list of priorities will be the production of the type of material I referred to earlier.

In the Caribbean we do not only have problems, but we also have people and ideas. What we need more than anything else is the commitment and the support that must go hand in hand with the social, professional and political motivation on which I have laid great emphasis. It is advisable that we begin by setting ourselves simple, attainable targets of focal importance to the overall goal of better nutrition. We are the converted. We must proselytize, and ensure that we do so honestly and well. ▲

WORLD POTATO PRODUCTION - 1976

World production fell 5% in 1976 from 1975 levels. U.S. production climbed 9% to 15.8 million metric tons, i.e., over 7% of total world potato output of 218.4 million tons.

Canada's output is up 13% to 2.5 million tons. Western European output is down 11% to 39.9 million tons due to drought conditions. Several of these countries, including West Germany, Belgium, Luxembourg, United Kingdom and France have had their lowest output in recent years.

On the contrary, significantly increased production occurred in Ireland, Norway, Sweden, Argentina, and India where it is estimated at an all-time high.

- Frank E. Hokana

In "World Potato Output Down"

Foreign Agriculture, XIV:49:2, 1976.

OBESITY: IS IT PREVENTABLE IN INFANCY AND CHILDHOOD?*

by

A.W. Myres

Obesity is widely discussed as an adult problem but increasing recognition is being given to preventive action in infancy. Infancy is a crucial period in growth and development and a considerable amount of evidence now suggests that the obese baby is highly likely to become obese as a child and as an adult.

The terms 'overweight' and 'obesity' are often used synonymously, but the latter refers to an excessive accumulation of body fat. Obesity, as defined by Webster, is "an increase in body weight beyond the limitation of skeletal and physical requirement, as a result of an excessive accumulation of body fat". Some unknown proportion of obese adults have been obese since infancy and childhood. This paper is concerned with the significance of obesity in this early period. We know that the treatment of obesity in adults is difficult. If, as current evidence suggests, infantile obesity is a problem which persists into latter childhood and adult life, then prevention must logically be initiated in infancy.

IMPORTANCE OF THE EARLY YEARS

Eating practices and attitudes to food are also established during the early years. These are greatly influenced by the family environment; therefore attempts to bring about any

---

This is an abridged version of an article which was published in the Canadian Family Physician, April 1975, and is reprinted by permission of both author and publisher. Dr. A.W. Myres, Ph.D., a nutritional biochemist, is on the staff of the Health Protection Branch of the Department of National Health and Welfare, Canada, and helped evaluate data from the Nutrition Canada Survey.

permanent change in habits and attitudes must begin with the family, primarily through the mother, and at the earliest stages of life.

Infants and young children are usually dependent on the family, particularly the mother, for their physical and emotional needs, and obviously the manner in which these needs are satisfied determines the child's growth and development. The requirement for food and nutrients is an important part of the total physical needs. Feeding also has important emotional and psychological dimensions in maternal-child interactions. The problem of nutritional needs can be reduced to three basic questions: what to feed, how much and how often? When malnutrition, either of deficiency or excess, occurs, it is not sufficient to view it simply as a result of either under- or over-consumption of food. The total environment must be considered, since several factors (social, cultural, medical, economic and psychological) may act singly or concurrently, to influence nutritional status.

CONSEQUENCES OF INFANTILE OBESITY

There is general but not unanimous agreement that fat babies have a high probability of becoming fat children. Other findings support the statement that fat children do not 'outgrow' their obesity. Techniques have been developed for estimating the size and number of adipose cells in tissue samples obtained by needle biopsy. This has greatly increased our understanding of why the onset of obesity in early life may have particularly deleterious consequences.

Using these techniques it has been shown in animal studies that not only the amount of body fat but also the number of cells were greatly increased by overfeeding before weaning. It has also been shown that exercise in early life reduces the accumulation rate of fat cells, resulting in a significant reduction in body fat at maturity.

The relationship between the age at onset of obesity and cellularity of adipose tissue has also been examined in children and adults. The number of fat cells was increased in those children who had already become obese by one year of age and in adults who dated their obesity to childhood. Cell number was not increased in those children whose obesity occurred later than the first year of life. In all obese individuals the cell size was increased. It has also been shown that in obese adults who have reduced their body weight, the number of fat cells remains unaltered.

It therefore appears that there is a sensitive period early in life when the basic complement of fat cells is acquired. Once acquired, the total number of fat cells cannot be reduced (only the cell size) and the persistence of hypercellularity may in part explain the high recidivism in the reduced obese.

There are still technical methodological problems to be resolved in the estimation of fat cell number: empty fat cells or precursor fat cells cannot be counted because they are not identifiable. Nevertheless, the observation[1] that children who had become obese during the first year of life had significantly greater numbers of fat cells than children of the same age whose obesity was of later onset is very important. Errors in cell counting, which presumably would be the same in counting cells from early onset or late onset obesity, could not account for this difference.

Despite these limitations in our knowledge, it is logical to try and prevent obesity as early in life as possible. Obesity is not present at birth (except in infants of prediabetic or diabetic mothers) and must obviously develop at a later date. The

---

[1]*Brook, C.G.D., Lloyd, J.K., and Wolff, O.H. "Relation Between Age of Onset of Obesity and Size and Number of Adipose Cells", Brit. med. J. 2:25, 1972.*

foregoing evidence indicates that the first year of life may be a particularly critical time for adipose tissue development.

ENVIRONMENTAL AND CULTURAL FACTORS

One of this century's great advances in paediatrics has been the increase in our knowledge of infants' nutritional requirements.

Several British studies have shown a very high prevalence of obesity, assessed by comparison with standard percentile growth charts, in artificially fed babies. A significant feature of these reports was the small proportion of solely breast-fed infants and the early age at which many of the infants were introduced to solid foods.

In most developed nations there has been a general decline in breast-feeding in the past 50 years. Prevalence of breast-feeding during the newborn period in the U.S.A. was about 90% in the 1920's, dropping to 25% in 1958. Similar trends have been noted in Sweden and Britain. In 1963, a nationwide Canadian marketing survey found that at two months of age 20% of infants were being breast-fed. A similar percentage was found in 1973.

FEEDING THE BABY SOLID FOODS - WHY?

The decline in breast-feeding has apparently been accompanied by a tendency to introduce solid foods at an increasingly earlier age. It is difficult to find physiological reasons for this change, particularly since there are definite developmental stages indicating that solid foods are not required until about four to six months of age. Infants will accept puréed solid food from a very early age, but it is doubtful if this is a physiological process. The eruption of teeth at about five to six months is an obvious clue to the readiness for solid foods. The Committee on Nutrition of the American Academy of Pediatrics concluded that "no nutritional superiority or psychological benefit results from

the introduction of solid foods into the infant diet prior to 2½-3 months of age".[1] Possibly the danger of infantile obesity was not recognized at the time of the American statement, since a panel on Child Nutrition of the British Government's Department of Health and Social Security concluded in 1974 that "the early introduction of cereals or other solid foods to the diet of babies before four months of age should be strongly discouraged".[2]

The reasons for the growing tendency to introduce solid foods at an early age have not been systematically analyzed. One of the major reasons must be that there are now available a wide range of convenient, palatable foods suitable for feeding to very young infants. The attitude of the paediatrician or physician is also of great importance. Jelliffe[3] showed in an extensive survey of the literature how, in paediatric textbooks, advice on the age for introducing solid foods has decreased from about one year of age in 1900 to two months in 1972. Professional advice, therefore, appears to parallel the development of commercial infant foods. Body weight is also used as a guide for introducing solid foods. However, if artificially fed babies are now growing faster than the breast-fed baby, this means that the tendency to rapid weight gain is aggravated. There are no apparent advantages to early solid feeding and there may be a number of disadvantages, since the caloric density of infant foods is greater than that of milk. The early feeding of solids may therefore lead to overfeeding.

---

[1]*Report of the Committee on Nutrition, American Academy of Pediatrics on the Feeding of Solid Food to Infants. Pediatrics 21:685, 1958.*

[2]*Report of a Working Party on the Panel on Child Nutrition, Department of Health and Social Security. Report on Health and Social Subjects, No. 9. Her Majesty's Stationery Office, London, 1974.*

[3]*Jelliffe, D.B., and Jelliffe, E.F.P. "Fat Babies: Perils, Prevalence and Prevention." J. Trop. Ped. and Environ. Child Health. (in press) 1975.*

THE PROPER AMOUNT OF FOOD

A significant observation in relation to method of feeding is that energy intake in the breast-fed baby is set by the amount needed to satisfy hunger - control is physiological. In contrast in the bottle-fed baby, the amounts fed are under the control of the mother who, for a variety of reasons, may induce the baby to drink more than it would if left to its natural inclinations. The problem is further complicated by the introduction of solid foods - a situation which Jelliffe has termed "double feeding" - in which the child has not only to consume the contents of his bottle but also to "clean" his plate. A number of psychological factors may be involved here. A child may often be congratulated for consuming all the food served to him, but paradoxically, not for knowing when he has had enough. In this way, the infant's own physiological signals concerning satiety may become suppressed and a habit of overeating may be established. When the mother can see how much the baby has taken from a bottle, concern about under-feeding may lead to overfeeding. The fact that the mother of the breast-fed infant does not know how much milk the baby has consumed may be a great advantage.

There is experimental evidence that bottle-fed infants gain more rapidly in weight and length during the first 112 days of life than do breast-fed infants. The bottle-fed infants generally gained more weight for a specified gain in length than did breast-fed infants. It appears likely that the increased gains in bottle-fed infants are a result of increased caloric intake, since a statistically significant relationship between caloric intake and rate of growth has been demonstrated.

Obviously not all artificially fed babies are overfed or become obese and since energy balance is also affected by energy output, the importance of activity should be stressed. In this

context it is pertinent to note the results of a study of 31 infants aged four to six months.[1] Fat babies ate less than thin babies, but fat babies were less active than thin babies. A vicious circle is readily established since it is not easy to increase activity levels in obese babies. The authors suggest that patterns of activity may be set in infancy. This emphasizes the importance of play and positive interaction between mother and child.

FOOD AS A PSYCHOLOGICAL CONTROL

Early solid feeding together with rapid weight gain, may be seen as prestige symbols by some mothers. Food may be used to encourage sleeping, even though there is experimental evidence that the early provision of solid foods does not alter sleeping patterns. The giving of food may be equated with loving care. Food may also be used as a pacifier, as a reward for good behaviour, or to induce the consumption of certain types of food. In these situations there is a high probability of conditioning; internal or physiological cues of satiety and hunger may become confused. The eating behaviour of the obese is unrelated to any internal, physiological state but is largely under external control, being initiated and terminated by external stimuli. One can speculate that the ability to discriminate between internal and external cues may be set in infancy. The inability to discriminate between different stimuli may be another reason why long-term effectiveness in the treatment of obesity is poor.

In a study of lean and obese adolescents, the mothers of the obese individuals reported more feeding problems in infancy, earlier introduction of solid foods and the use of food (candy or

---

[1]*Rose, H.E., and Mayer, J. "Activity, Calorie Intake, Fat Storage, and the Energy Balance of Infants". Pediatrics 41:18, 1968.*

desserts) as a reward for good behaviour. It is clearly important that mothers should learn to discriminate between the emotional and nutritional needs of their infants, so that the two do not become confused in the infant's mind. Crying infants have needs other than food.

Another important distinction must be made between hunger and thirst. The combination of artificial milk formula, together with early introduction of solid foods may provide a solute load which is high in relation to the water available for excretion. These babies have an increased need for water; hence the provision of more food perpetuates this situation, establishing an overfeeding cycle.

CULTURAL CUSTOMS AND OVERFEEDING

Certain cultural customs in child care may encourage overfeeding: recently rapid weight gain was seen as an important criterion of health. This attitude may have been taken too far; a British paediatrician notes: "Our ancient departmental baby scales have proved useless because they only record up to 20 lbs. This is a reasonable weight for a baby approaching his first birthday, but our six-month babies have left it far behind".[1] In future, at least as much attention should be paid to overweight as has been traditionally applied to underweight in babies.

Parental attitudes, often reinforced by professional advice, have tended to look upon the 'good' baby as passive - a good eater and sleeper. This brings up the question of individuality - babies are individuals and have their own patterns of sleeping and eating. In our desire to mould these patterns into something we believe to be acceptable, illustrated by the thinking that all

---

[1]*Smithells, R.W. "Maternal Health and the Unborn Child". Health Ed. J. 31:40, 1972.*

babies are basically alike and require approximately the same amount of food at the same regulated intervals, we may be placing infants at a greater risk of being overfed.

GENETIC FACTORS IN OBESITY

As social, public health and nutritional conditions improve, so the growth rate and final size of children increases up to limits determined by genetic constitution. In a society where food is abundant and hard physical labour unnecessary, genetic factors dictate predisposition to overweight. A number of studies have observed that obesity tends to run in families, although it is unclear how the genetic influence operates. We tend, perhaps, to despair when we hear that a disorder is of genetic origin. This should not be the case. On the contrary, it is all the more reason for action. Environmental factors will lead to *social inheritance* as opposed to *genetic inheritance*. Family social patterns such as eating habits or the psychological milieu of the family, for example, will contribute to parent/offspring correlations. Possibly infants who become obese have a certain hereditary potential to gain excess weight, but if they are not overfed the condition might be avoided.

IMPORTANCE OF PARENTAL NUTRITION EDUCATION

Because infancy and early childhood are so critical to physiological development and to the establishment of lifetime habits and behavioural traits, this period is thought to have the greatest potential for the prevention of obesity. Furthermore, obesity incurred during infancy imposes special difficulties for weight reduction later in life. Because the number of fat cells may be laid down early in life, weight reduction in adolescent or adult life is extremely difficult.

This does not deny the importance of other forms of obesity or imply that attempts to treat and prevent adult obesity are unwarranted. However, in adulthood we are often confronting deep-seated attitudes and life styles which are notoriously difficult to change. Furthermore, we know that the impact of the immediate family on the child is of paramount importance. Long-term benefits must therefore come from educating parents, especially mothers, so that appropriate attitudes towards food and sound eating practices are incorporated into their life style. It is easier to try and change the attitudes of parents when their children are involved than to change their own lifetime habits. Obesity is a problem that must be foreseen in infancy. ▲

"Formulas given to bottle-fed babies contain added lactose - milk sugar or corn sugar, so the babies very early develop a taste for sweets...Canned baby foods also contribute to further development of a sweet tooth, because even foods which are naturally sweet have added sugar. By the time a child reaches the age of three or four, a sugar-consuming preference has been strongly ingrained in his eating habits. Unless steps to reverse this pattern are taken early and vigorously, it will remain a lifelong pattern tending toward dental disease, obesity and possibly coronary disease later in life".

- Dr. Julius Ozick

CULTIVATION OF RABBITS AS A MEANS OF INCREASING THE PROTEIN FOOD SUPPLY*

by

Enrique Salinas Aguilera

INTRODUCTION

The world food problem is becoming increasingly serious by the day, and every country is having to seek solutions for the qualitative and quantitative stabilization of this situation which has such serious effects for mankind.

From the viewpoint of the livestock breeder, it is important to promote species that reproduce rapidly and that have a favourable food-meat conversion ratio. These considerations are basic to determining the cost per protein unit.

In most of the smaller species the principle of "greater production in a shorter time" is found to apply. Among these species, the rabbit is one of the most widely favoured for cultivation, in view of its many advantages: it is prolific, its meat has high nutritional value, it grows fast, and matures rapidly, it has a good conversion ratio, it is easy to care for, it can be raised in very little space, its dung is of good quality, and its fur and all its by-products can be used completely in various ways.

---

*Reprinted with the permission of the Pan American Health Organization, from the VII Inter-american Meeting on Foot and Mouth Disease and Zoonoses Control (Scientific Publication No. 316). Enrique Aguilera is Director General for Poultry and Minor Species, Ministry of Agriculture and Livestock, Mexico City, Mexico.

RABBIT CULTIVATION AT THE WORLD LEVEL

Rabbits come originally from north Africa and southern Europe. In some countries their domestic breeding and cultivation dates back to at least 50 B.C.; in others it is almost unknown.

The domestic rabbit saved the peoples of Europe from dying of hunger during and after the Second World War, and at present it is in this part of the world that rabbit meat is most widely eaten. France heads the list in annual per capita consumption (6.1 kg). Next come Spain (1.8 kg), Italy and Switzerland (1.2 kg), the United Kingdom (170 g), and the U.S.A. (907 g). Germany and its neighbouring countries of Poland, Hungary, and Czechoslovakia, also consume a great deal of rabbit meat, but no information in this connection is available. The same is true of China.

In the countries mentioned major sums are invested in the breeding of the domestic rabbit, and its production has been industrialized both for the meat and for the pelt. France leads the world in production of rabbit meat (300,000 tons a year), followed by Russia (250,000 tons), Italy (110,000 tons), and England and the U.S.A. (31,000 tons). There are no data for other countries, although some, such as Poland and China, are known to be exporting rabbit meat.

In the light of the need for increased food production, it is well to have a good look at the characteristics of the rabbit, to serve as a basis for programmes aimed at the promotion of its use.

CHARACTERISTICS OF THE RABBIT

Capacity to Proliferate

In its capacity to proliferate the rabbit is outstanding. A breeding female can produce an average of 35 to 42 offspring a year. This translates into a yield in dressed meat per adult female of 600,000 kg over a 40-month period, as compared with 450 kg for the cow and 19,000 kg for the sow.

A cow's gestation period lasts nine months. The calf reaches sexual maturity at 18 months, but it must be 36 months old before it can be marketed at a liveweight of 450 kg. The sow, in turn, has a gestation period of 115 days and it gives birth to eight piglets on the average. The offspring are marketed at six months with a liveweight of 100 kg and reach sexual maturity at seven months. The rabbit, however, has a gestation period of only 31 days, and the number of offspring is seven per litter. They are marketed after 60 days with a liveweight of 1.8 to 2.0 kg and reach sexual maturity at the age of 4½ to 5½ months.

In the study that was conducted, 50% of the offspring of a breeding doe were females and the other 50% were males. All the females born within the 40-month period were mated upon reaching sexual maturity.

Rapid Growth

Another outstanding characteristic of the rabbit is its rapid growth.

During the first 20 days of gestation, the fetuses show little development, but in the last 10 days they grow at a rapid rate. The offspring weigh 50 to 75 g at birth and double their weight in the first six days of life. At one month they reach 500 g, at 60 days they weigh 1.8 kg and by 90 days - the best time for slaughtering - they are 2.5 kg.

This rapid growth is possible thanks to the high nutritional concentration of the doe's milk. It contains more protein than any other milk - 12 to 18%, as compared with only 5.8% for the ewe or sow, 3.5% for the cow, and 2.7% for the mare. Every 2.5 g of milk from the female rabbit brings about a gain of 1 g in the liveweight of the offspring.

Diet

The rabbit is herbivorous by nature, 50% of its ration consisting of forage and only 20 to 30% of grain, and is, therefore, one of the animals that competes least with man in its dietary requirements.

Management

Rabbits can be raised by virtually anyone. This means that persons who are unable to do heavy work for physical reasons - children, the elderly, women, and the physically disabled - can be utilized for the purpose. Some 300 female rabbits can be taken care of by one single person in an eight-hour day.

The rabbit will always require human care, since each one must be cared for individually. Hence, it will never be possible to eliminate human intervention and install mechanized breeding facilities such as those that handle thousands of animals at a time. This is one of the main reasons why rabbit breeding in many countries is kept at the level of households, cooperatives, or collective farms.

Maturation

The precocity of rabbits depends on the particular breed: most of them reach maturity at four to five months. The shortness of this time makes for reduced feeding costs, increased annual production, and lowered risk of diseases, accidents, etc.

Quality of the Meat

Rabbit meat is of great nutritive value because of its high protein and lower fat content as compared with other species (Table I).

Table I: Protein and Fat Content of Various Meats

Species	Protein (%)	Fat (%)
Rabbit	20.4	8.0
Hen	18.1	18.7
Chicken	18.2	10.2
Hog	17.5	13.2
Cattle	18.0	7.4
Goat	18.2	19.4

The value of rabbit meat lies not only in the amount of protein that it contains but also in the quality of the protein, it having a biological value of 40.15%, as against 31.62% for chicken, 27.11% for pork, and 24.61% for veal. Moreover, the cholesterol content of this meat is low (0.050%), as compared with beef (0.140%), pork (0.105%), and chicken (0.090%).

The yield of rabbit in dressed weight falls in a range of 54 to 68% depending on the animal's age, and is exceeded only by that of the hog, which is about 75%.

The meat has a pleasant physical appearance, being white with fine granulation and good conformation.

OTHER USES OF THE RABBIT

Fur Production

Because of its quality and durability, the fur of the rabbit is very useful industrially. The best quality pelts, preferably of natural colour, are selected for the manufacture of fine garments such as jackets, wraps, stoles. Although some kinds of rabbits are especially bred for fur production, only a small fraction of the world's supply comes from such sources. The

greater part comes from rabbits classified as meat producers, whose pelts are stained and treated to yield imitations of such furs as chinchilla, gray squirrel, ermine, beaver, ocelot, or fox. These imitations are becoming increasingly common in view of the difficulty of raising animals exclusively for their fur and the cost of such furs on the market.

At present 66% of the furs handled in the European fur industry come from the rabbit, and many of them are sold under other names at good prices. The most important fur centers are Leipzig, London, and Paris. France was the first country to undertake the practice of dyeing rabbit fur, and it is currently the world's largest producer of such pelts.

"In its capacity to proliferate the rabbit is outstanding. A breeding female can produce an average of 35 to 42 offspring a year."

Fur may be processed either industrially, with machinery being used to give it the qualities desired, or in a household or family operation, in which simple garments are made that require only a board on which to stretch the skins and some scissors, needles, and thread, since the work must be done entirely by hand.

Not all the pelts are of uniform high quality; 70% can be used by the industry for making garments, but generally the other 30% have defects in the quality or density of the fur. Even so, they find many uses, as for toys, adornments, and other articles or, depilated, in the manufacture of gloves, articles of clothing, shoes, etc., depending on the thickness of the hide. The fur left over after depilation can be used by the felt industry to make hats or fabrics.

There is also a long-hair fur which, because of its special qualities, provides thermal insulation 10 times better than wool. Articles made from this fur are light, soft, and resistant.

By-Products

When subjected to heat and pressure, the rabbit intestine yields oils that are useful in cosmetology and also, along with the tails and paws, in the manufacture of meat meal.

As a fertilizer, rabbit dung has very high value (surpassed only by chicken manure), especially for fruit and vegetable gardening, where it has given remarkable results because of its high percentages of nitrogen, phosphoric acid and potash (Table II).

Table II: Composition of the fertilizing elements in various kinds of dung. *(in percentages)*

	Water	Nitrogen	Phosphoric acid	Potash
Sheep	59.52	0.768	0.391	0.591
Hog	74.13	0.840	0.390	0.320
Cow	75.25	0.426	0.290	0.440
Horse	48.69	0.490	0.260	0.280
Hen	56.00	0.8-2.000	0.5-2.000	0-0.900
Rabbit	31.40	1.400	1.800	0.500

At present millions of earthworms are being fed on rabbit dung, which they transform into a finely powdered "humus" that is odourless and extremely potent as a fertilizer.

PROFITABILITY

In Mexico the profits to be made from rabbit breeding vary depending on the level at which it is carried on and the scale of production, in accordance with the corresponding factors.

At the rural family level the production unit may range from as small a one as five females and a male, which produce 2 to 3 kg of meat per week for home consumption, up to some 66 animals, which can yield an annual income of more than *6,000 pesos.*[1] This amount is doubled when the furs are also processed for sale.

In the first case the unit is organized with a view to taking advantage of the idle human and material resources to be found in the rural community, as well as to making use of the by-products

[1]*Equivalent value in US$ in 1975 before last devaluation: 12½ Pesos - 1 US$ [Source: Mexican Embassy].*

and of the agricultural equipment available. Characteristically, such operations utilize underemployed manpower and do not require any more equipment or tools than those normally used by agricultural workers. They are organized in a modular system and production is directed toward consumption by the household itself, with the excess going to a common market. Some items are not taken into account in the calculation of production costs, such as manpower and the use of farm by-products. By way of subsidizing these units, the Government helps them get started by providing farmers with training, technical assistance, and breeding stock of high genetic quality at low prices.

In large operations where there is a management involved, such as some *ejidos*,[1] the traditional rules of cost and capital availability apply. The minimum scale for such an operation is of the order of 330 breeding animals. The investment needed per animal, including working capital, amounts to *850 pesos*. This calculation is based on modern installations and advanced production techniques.

Whereas the private farmer's enterprise makes use of techniques designed to minimize costs largely by using equipment that saves manpower, the ejido tends to employ a larger number of agricultural workers per production unit and use more primitive equipment and tools. The ejido, which seeks to benefit the entire community, employs peasants and pays them salaries starting at 15,000 pesos a year. Earnings and funds on hand are reinvested to creat new productive sources of work.

Another factor that plays a significant part in determining the profitability is the type of housing that must be provided for the rabbits. This depends on the environment. The farm may be equipped with unsheltered cages if the climate is mild, whereas hutches will have to be built if it is more severe.

---

[1]*Ejido is public land belonging to the whole community.*

There are various factors, then, that contribute to the profitability of raising rabbits. Some rural ejidos have recorded profit levels of 30%, and private farms have had returns as high as 40%.

In the end, success depends on efficient overall planning of the farm or ejido, management, operating methods, and farming techniques, as well as the existence of a demand in the country for the meat and other products of the rabbit. ▲

A tasteless pale-yellow powder which can be stored anywhere, in any climate, may turn out to be a big contribution towards feeding the world's undernourished millions. The powder is dehydrated meat. One of its advantages is that it needs no kind of refrigeration for shipping or storing. It can be transported, like cement in bags, and even turned into bread or biscuits.

Meat powder's nutritional value is greater than that of fishmeal, or beans. Body-building protein ingredients are generously present in a form that is readily absorbed by the body. So the development is of particular importance at a time when thousands of people around the world die every day of starvation.

- The Jamaica Daily News
21 September 1976

A CONSUMER LOOKS AT FOOD ON THE MARKET*

by

J.A. Campbell

Let us look at the need for standards through the eyes of a well-informed, critical consumer who first goes into a supermarket. As he looks critically along the shelves he makes several observations that cause him concern: One jar has a beautiful label indicating very clearly that the product is, in fact, orange marmalade. But that is all it tells us. Where was it manufactured, by whom, and what ingredients does it contain? If it is good, the manufacturer should be proud to put his name and address on the label. In any case the label is not very informative.

As an interested consumer, he does not think it is asking too much for food to be labelled clearly and prominently as to the common name, the ingredients and the name and address of the manufacturer.

Now he turns to the ketchup shelf. One bottle is bright red, and another is reddish brown, still another has a dark line across the top, ¼ inch thick with fuzz on it. We're sure that the latter was not put there by the manufacturer - but why should it be there at all? It does not look appetizing - nor in fact does the brown bottle, but all are labelled "ketchup". Obviously these products are of varying quality; one is probably acceptable, one not acceptable and one in doubt.

---

*Presented before the Seminar on Standards and Quality Control, Georgetown, Guyana, 26-28 September 1975. Dr. Campbell, formerly of the Caribbean Food and Nutrition Institute, is now Vice-President of Nutrition Research Consultants Ltd., 1785 Riverside Drive, Ottawa, Canada K1G 3T6.

His conclusion is that there should be certain standards of quality below which no product offered to the consumer should fall. Where various grades are available as in some products, these should be clearly indicated so that he may choose Grade 1 or Grade 3 as he wishes.

He returns to the bright red ketchup which is even brighter than the fresh tomatoes he sees nearby. He knows that beautiful colours can be added to foods, but the label does not list the ingredients. If he could find out from the label who the manufacturer was he could ask him. He is left with the impression that this product isn't really quite as good as it should be either, but the manufacturer wanted to give the impression that it was and therefore "brightened it up".

Further along he selects what appears to be a good bag of rice. The label states that it contains 16 oz. net weight. It seems a little light so just to make sure he puts it on the scales at home. It contains 14 oz.

Recent price increases have encouraged many consumers to look for new ways to compare value and be sure of quality.

These examples seem to tell him that he is being cheated and a victim of fraud. He, as a consumer, would like some control of what is added, or not added to ketchup and other manufactured products. He wants to buy what the label states he is purchasing, not something which is significantly less than that.

ADVERTISING

After his trip to the supermarket he goes home and turns on the radio or T.V. He hears about some wonderful foods and dietary supplements that are being advertised. Each advertisement tells him that if he consumes just so many spoonsful of this or tablets of that, he will have improved health, greater strength and more vitality. They imply, to a greater or lesser degree, that all consumers of these products will be able to be good football players, runners or swimmers, and everyone wants these qualities. But if we were to look at the labels - at the composition of the products - we would find that one contains only vitamin C; another contains some minerals and vitamins A and D; another contains just B vitamins. How can all these products which differ so much in composition have the same effect?

Furthermore, how do the people who advertise these products know what we need? My diet is not the same as yours and if we need extra nutrients, your needs may be quite different than mine. In fact, if we eat an adequate diet none of these products will do any of us any good. We have specific needs for various nutrients and excesses above these amounts perform no useful function. They will not make us run faster or live longer. It would seem that the manufacturers would like to have us believe that these products are somewhat more effective than their composition would suggest. It is acknowledged that advertisers must be enthusiastic to sell their wares, but statements which are false or likely to create erroneous impressions as to the value of the product are simply not acceptable.

As critical consumers we want the plain, unvarnished truth in labelling and advertising. The easiest way to control advertising is to require prior submission of all advertising material to an appropriately constituted body.

Of prime importance to today's consumer is the decision-making capability to purchase goods and services that provide maximum value for money.

HEALTH HAZARDS IN FOOD

Let us suppose that our consumer is very fastidious. He knows that milk is often not produced under the most sanitary conditions. Occasionally particles of straw, manure or hair may fall into it or it may be diluted with none too clean water to "make it go a little farther". He knows also that it is an excellent food for bacteria as well as for children and he gets very much concerned when he sees the results of the bacteriological examination that indicates that the bacteria were too numerous to be counted and that many were identified as coliform which is an indication of faecal contamination. The fact that the milk may be pasteurized does not entirely alter his concern.

He also has an aversion to purchasing flour, rice and other cereals with beetles, rat droppings and other miscellaneous contamination in them. He needs to know that appropriate standards will ensure that such foods are not offered for sale. Filth is simply unacceptable.

Finally he comes to his most serious concern. Can he be sure that the food he purchases is free from substances which will make him sick or even *kill* him?

He knows, for example, that the aflatoxins are a very interesting group of compounds. They cause liver cancer in rats and other experimental animals. It appears that at certain levels they also have similar effects in humans. They are produced by a mold which often occurs on peanuts, particularly those which have not been properly dried and kept dry. He would like to be assured that the peanut butter he sees on the shelf contains no more than very minimal traces of these compounds.

He is even more concerned about the possibility of botulism*, for instance. He has read of an incident of botulism which was caused by improperly processed liver paste which had been used to make sandwiches. A whole family was hospitalized as a result, and two children died in a few days while the others were critically ill. He would like to be assured that, if he were to process liver paste or some such processed food, whether locally produced or imported, he would not endure a similar fate.

Health hazards should obviously be a most important concern and the first priority for the development and enforcement of regulations relating to food. We are concerned about the health of our people in many ways but we must not ignore the possibility of harm through the food supply.

DEVELOPMENT AND ENFORCEMENT OF STANDARDS

Now, you may ask, why should there be all this concern at this time, when we have managed fairly well in the past? There are very good reasons for this concern. In the past many of our foods were imported. These were likely subjected to the control of the exporting country, where the manufacturer was experienced with his product and his process. Now more of our foods are processed locally and we are using new foods and developing new processes. We are faced with different storage problems. It is essential, therefore, that appropriate standards be developed to meet our particular needs. In some cases we may be able to utilize the standards of other countries, but in others we may have to develop our own.

**Editor's note: Botulism is a form of food poisoning caused by one of the most powerful poisons, the toxin of the bacterium Clostridium botulinum produced in improperly processed or canned foods. It is characterized by vomiting, abdominal pain and symptoms relating to the nervous system.*

The assurance of a wholesome and nutritious food supply depends on many factors. It requires sound food laws, adequate regulations and standards and effective enforcement.

Enforcement without appropriate regulations is difficult if not impossible. It requires continuing intensive effort by a highly trained group of scientists and administrators, motivated by the goal of maintaining a clean and wholesome food supply. The maintenance of an effective food control group requires considerable assistance and cooperation, both within the government service and outside it. If the group is to be respected and do an effective job, it must have a well recognized status within the responsible ministry and generally be regarded as an important component of the Health Care and Health Protection programmes of the government. It must be able to attract the best scientists and administrators and be able to hold them with adequate salaries, good working conditions and up-to-date equipment.

When in need of assistance and advice the group must be able to call upon the appropriate trade association or manufacturer. Such cooperation ensures sound regulations and enforcement, as it is normally not possible to have sufficient trade expertise within a government ministry.

The group must also be able to turn to consumer organizations for advice, because it is really for the protection of the consumer that the whole programme is developed and it is important to have his views. If the consumer cannot or will not assist, the programme loses its base and is likely to become ineffective and irrelevant.

Finally, liaison and coordination with regard to regulations must be available from other neighbouring governments. This is particularly important here in the Caribbean where strong efforts are being made to increase local trade and promote mutual assistance. In this connection CARICOM has a very important role

and will undoubtedly be able to assist. When dealing with international markets the Codex Alimentarius Commission will be found to be of great value.

OTHER ASPECTS

We have confined ourselves to food, but there can be health hazards, fraud, filth, false labelling and advertising and poor quality in almost any manufactured article. Examples could have just as readily been taken from the construction, clothing, household chemicals, electronics or other industries.

In all these areas it must be recognized that the products are usually manufactured for the consumer. He has a right to have the articles which he purchases properly labelled so that he can make informed choices. Furthermore, the articles should perform satisfactorily the function expected of them.

On the other hand, while it is the government's responsibility to develop and enforce standards, the consumer and the producer must cooperate in the process. Only in this way can the consumer obtain the protection he needs in the market place. ▲

"We live off a quarter of all we eat.
Doctors live off the other three-quarters".

- From an Ancient
Egyptian papyrus
proverb.

NEWSPAPER CLIPPINGS

PATIENTS, DOCTORS CASUAL ABOUT HYPERTENSION

From The Jamaica Daily News, 17 November 1976

Caribbean doctors have been told that physicians and patients alike adopt a casual approach to the problem of blood pressure control, medically called hypertension which causes many deaths in the Region each year.

The observation came during the first session of a workshop on hypertension in the Caribbean being held at the Queen Elizabeth Hospital, Barbados.

Speaking on the subject, "treatment of severe hypertension in hospital", Doctor G. Nicholson (Jamaica) said it had been estimated that only a small percentage of all hypertensive patients under treatment were even close to optimal control.

Dr. Nicholson deplored the unsatisfactory picture and added: "too frequently do we see patients with malignant hypertension and end stage renal failure or patients presenting with strokes, whose hypertension has been treated for years, if one can so abuse that term, with pink or two yellow tablets daily."

His paper spoke of complications of severe hypertension which most commonly represent therapeutic failures as well as the failure of patients in Caribbean societies to turn up for therapy.

It stated that in the patient with malignant hypertension each day without adequate blood pressure control increased the risk of heart failure and cerebral haemorrhage.

Dr. Nicholson said that results from many hypertension clinics have proved that in the majority of hypertensive heart disease cases the blood pressure can be controlled by skillful use of the drugs currently available.

A Barbadian doctor, Trevor Hassell, in his paper "Hypertensive Clinic in the General Population", stressed the importance of patient compliance, attendance at the hypertensive clinics by people with elevated blood pressure levels.

Dr. Hassell said that the question of compliance was currently one of the most talked about and difficult aspects in the management of hypertension.

He pinpointed the need to educate the population fully and added that once a patient had been made convinced of the benefits of continued anti-hypertensive medication and attention, he or she then attended clinic regularly.

Dr. Hassell's paper is based on a report on a community-based hypertensive clinic, set up in a rural area in 1972 to study the problem of hypertension in Barbados in greater detail and in a more organized manner than had been practised up to that time. The programme is still going on. ▲

PIG INDUSTRY

From The Jamaica Daily News, 5 November 1976

A determined effort is being made to rescue the Jamaican pig industry from once again being mired in cyclical problem of glut and shortage.

According to the Minister of Agriculture this Island stands to earn $1.3 million from shipping 100,000 lbs. of pork on a monthly basis to Trinidad, starting the end of this month.

Simultaneously, a commercial company - Jamaica Meat Packers Limited - is being set up to buy surplus pigs and so bring a measure of stability to the price of pigs.

At the same time, the Lydford Processing Plant is being reactivated and will be used by the new company.

It is well that an effort is being made to shore up the industry, for as the Minister says, if conditions are allowed to continue as they now are, prices will once again slip and the country will be back in the position of having to import its pork and pork products.

The current glut which reflects a position of self-sufficiency except in the case of pigtails, sent the Agricultural Development Corporation (ADC) scurrying around looking for export markets. That the ADC has been successful in taking a piece of the Trinidad market is good news and it is to be expected that there will be a constant supply to that market and not just a one shot.

In the meanwhile, we have no doubt that the ADC, through its subsidiary company or by itself, will be looking to explore other markets both in the Caribbean and farther afield.

Farmers will no doubt be heartened with the current developments and this new optimism cannot be allowed to evaporate. Added markets must be found and a new assault made on the local market where, through the increasing influence of the Rastafarian cult, a lot of people are turning off pork and pork products.

A determined effort will have to be made to sell the product and it can be done with imagination and creativity.

But while the effort is being made to develop the local and export markets, the farmers themselves will have to realize that quality is going to be an important factor as will be efficiency and low cost production.

We should make the point early that Trinidad will be buying our pork at a cheaper cost than we are doing, not because the ADC favours Trinidadians over Jamaicans, but simply because to sell in that market and be competitive the price had to be lowered.

If the price is now competitive, then the effect would be felt in the local market quickly, as with the authorities unable to dispose of the surplus, prices would continue to decline and so force farmers out of business and the consumer would be caught in a trap of having to pay higher prices than what they are now paying.

Perhaps the ADC should stress this point, for already people are asking why is it Trinidad should be getting Jamaican pork cheaper than Jamaicans. ▲

$36 MILLION CARIBBEAN FOOD CORPORATION (CFC) LAUNCHED

By Canute James
From The Jamaica Daily News, 23 September 1976

The $36 million Caribbean Food Corporation (CFC) has been launched with the aim of reducing the Region's dependence on imported foods, and improving the health of an estimated 6,000 toddlers (in Caribbean Community countries) who are in imminent danger of death from malnutrition.

Jamaica is one of the three principal shareholders in the venture, and will hold 25% of the equity. Guyana and Trinidad and Tobago will also hold 25% each while the remainder is being split between Barbados, the other islands of the Eastern Caribbean and Belize.

All the countries of the CARICOM group, except Montserrat and Barbados, have signed their financial commitment to the establishment of the Corporation, the first productive multinational venture under the aegis of the Community.

The CFC is starting operations with initial capitalization of $3.6 million, but the member countries are being called on to provide $1.8 million for the first issue of shares.

From its headquarters in Port of Spain, the Corporation will oversee the proposed $400 million regional livestock development scheme, and the multinational food farms which are being established in Guyana and Belize.

A pre-feasibility study of the livestock scheme has also been completed. The scheme calls for a ten-year programme spread over one million acres in different member countries. It will be built on the national cattle, sheep and goat herds of CARICOM members.

The programme is planned to provide 26,000 jobs in field and related agro-industrial operations, and already 25,000 head of two types of hybrid Jamaican seed stock, valued at $25 million, have been identified for use on the programme.

The CFC will also be in charge of work on regional fisheries development, and experts in this field from the Canadian International Development Agency (CIDA) have been enlisted.

The new regional company will also be looking at fruit and vegetable cultivation in the smaller islands of the Eastern Caribbean, and a team from the United Nations Development Programme is helping in this.

The Caribbean Food Corporation will also be engaging in commercial-type operations such as the bulk purchasing of fertilizers which are not produced in the Region.

Regional officials have said that two of the main aims of the CFC will be to reduce the regional $450 million annual food import bill, and improve the diet of the 4½ million people of the Caribbean Community. ▲

IMPROVING PROTEIN FOR DEVELOPING COUNTRIES

From The Jamaica Daily Gleaner, 5 October 1976

Scientists at Reading University in England have identified strains of soyabean suitable for widespread cultivation in tropical areas.

The work has been running in collaboration with similar studies carried out in tropical research units throughout the world including the International Institute for Tropical Agriculture at Ibadan, Nigeria and the International Crops Research Institute for the Semi-Arid Tropics at Hyderabad, India.

A new weapon in the hunger war: soyabean plant and shelled beans.

[Photo: USIS]

At Reading the work has concentrated on those aspects of the environment which affect crop growth - particularly climatic conditions - and on developing techniques for screening large numbers of different types of plants.

The additional knowledge brought out by the project will be largely used for plant breeding programmes to help subsistence farmers in the developing world. Its success could make supplies of high quality seed available for growing higher yielding crops, both in humid tropical countries and in semi-arid regions.

The Unit had been successful in identifying the climatic variations which affect crops and had isolated a number of soya-bean plants suitable for cultivation in tropical regions.

"As a result of the research coming out of Reading and similar units throughout the world the chances of providing a cheap and plentiful food supply for developing countries are greatly increased." ▲

CARDI TO STUDY 'MILPA' SYSTEM - HIGHER YIELDS FOR THE 'MILPERO'

From The New Belize, September, 1976

Most of the grains produced in Belize is cultivated by the *milpero*[1] retaining the traditional *milpa*[2] system of agriculture. Yet most milperos get along only as subsistence farmers.

This situation is gradually changing, and programmes are being implemented to accelerate this tempo of change. These programmes are in keeping with Government's policy to develop agriculture for self-sufficiency.

---

[1]*Milpero - maize farmer*

[2]*Milpa - maize field*

In 1973, a joint agreement was signed by the Government of Belize, CARE and the Development Finance Corporation. The objective is to encourage and enable milpa farmers to carry out more supervised agriculture with the necessary credit capital, equipment and technical assistance.

The programme has been designed to encourage farmers to undertake farming as a full-time, year-round occupation. It is expected that from the traditional milpa system, small farmers will earn more money to do mechanical agriculture on a profitable basis.

Despite several set-backs (hurricanes and droughts), grain production had already been boosted.

Now, with the urgency of the Regional Food Plan to boost agricultural production and to cut back on the Caribbean Region's annual billion-dollar food bill, the Caribbean Agricultural Research and Development Institute (CARDI) has been founded by regional governments. It will act as a catalyst to accelerate this eternal tempo of change to meet our food requirements. CARDI's aim is to increase its effectiveness by a continuing process of "monitoring" the agricultural and research needs of the member countries of CARICOM.

In July 1976, CARDI undertook to initiate a project in Belize in cooperation with the Ministry of Agriculture.

Its objectives are two-fold, with the ultimate aim of developing sound, efficient and economical production practices in agriculture.

(1) Research into methods of improving food production from milpas so as to improve the living standard of the milpero and his family while simultaneously boosting the amount of food produced locally.

(2) It will also do a thorough study of the milpa system with a view to increasing the duration of a milpa and so extending the area of land that can be best managed economically and beneficially by a milpero and his family.

Milpa under cultivation.

Comprehensive research will also be undertaken by CARDI for better production of vegetables during the wet and dry seasons through proper irrigation and modern and economical methods of vegetable cultivation. The result of this research, it is hoped, will encourage the Belizean farmer to produce more vegetables on a profitable basis. With such a programme for vegetable production all year round, it is envisaged that vegetable production (cabbages, tomatoes, carrots, onions, cucumbers, lettuce and peppers) will be adequate to meet local demand and for export to the CARICOM Region within a few years.

CARDI will also research ways of increasing yields to get the most out of agricultural inputs. It will look into the possibility of encouraging the local food processing industry in preparing such consumer items as tomato paste, carrot juice and food preserves for export to the Caribbean Region.

The Research Institute will also be involved in other projects in Belize including the Belize/Jamaica Regional corn/soyabean project in the Belize River Valley Area. ▲

CORNY!

The origins of United States corn are misted in the remote past. The most we can say is that the American Indians developed it, in one of the great botanical achievements of all time. It undoubtedly came from a wild grass, now tentatively identified as Central American teasinte. Indians of both Americas were growing sweet corn, pop corn and meal corn of various strains when the first Europeans arrived. Long before that, it had passed the stage where it would revert to the wild type if left untended. Botanists can make only very rough estimates of its age.

- New York Times
8 August 1976

BOOK REVIEWS

CONTROLLING DIABETES

Bureau of Health Education, Ministry of Health and Environmental Control, Jamaica. 8 p. illus. (partly col.) Free.

Against the background of the wide prevalence of diabetes mellitus in Jamaica and throughout the Caribbean, this useful booklet considers various aspects of the disease and its control. It emphasizes the importance of diet, exercise and care of the body by means of clear and specific instructions, well-illustrated with photographs. In a series of colour photographs depicting familiar and locally-available foods, it underlines the importance of diet in the diabetic regime. A more comprehensive treatment of the subject of dietary control will be given in the forthcoming diabetic booklet of the Caribbean Association of Nutritionists and Dietitians (CANDI) scheduled for publication in 1977. However, while antedating this publication, "Controlling Diabetes" will prove an ideal supplementary and complementary tool, and it is felt that the two publications will help, in some measure, to fill the current need for simple educational materials on diabetes. Although originally conceived with the Jamaican audience in mind, this booklet should prove useful to governments and special bodies in other CARICOM countries developing programmes for controlling the disease.

Diabetic patients, as well as nutritionists, dietitians and personnel from the health sector will find it of immense practical value and it is also expected that, while not intended to be a textbook, it will be a valuable source of information for teachers and students in public health, community nutrition and allied courses. In this regard, it is hoped that the colour photographs will be reproduced in the form of transparencies for teaching purposes, to alleviate the current dearth of audio-visual communication materials.

B. Andrea Okwesa ▲

NUTRITION IN JAMAICA, 1969-70

Ashworth, A., and Waterlow, J.C. Extra-Mural Department, University of the West Indies, Mona, Kingston 7, Jamaica. 1974. 130 p. J$2.00, US$2.20, UK£1.20p.

This is a report on nutritional status and the food supply situation in Jamaica in 1969, which was prepared by an expert committee for the Scientific Research Council. It contains much information from which later changes can be assessed, and provides a valuable collection of data. Six chapters deal with nutritional status, food supplies and the pattern of food consumption, existing schemes for nutritional improvement, present food policy, research and development, and prevention of infantile malnutrition. Under nutritional status, recent findings are reported on vital statistics, dietary surveys and anthropometric, biochemical and clinical measurements. These are derived mainly from surveys of children and the most comprehensive data are the anthropometric. The general picture is of malnutrition as an important problem in children aged less than 3 years. The main schemes for nutrition improvement in 1969 consisted of the distribution of free or subsidized milk powder for infants; these were run both by government and voluntary agencies, and encountered problems of efficient distribution to those most in need. Food policy was directed towards increasing local food production and establishing an agricultural purchasing and marketing agency to help the small farmers dispose of their produce. It is clear from this report that, while infant death rates have been reduced, there is still much child malnutrition in Jamaica and that this is inevitably linked to the existence of poverty, social deprivation and the inability of poor families to cope with rising food prices and unemployment. The community measures described here are mainly information-gathering exercises or palliative actions, and it is

evident that, as in many other developing countries, nutritional improvements in Jamaica can take place only alongside a general rise in the living standards and conditions of poor people.

Erica F. Wheeler
From "Tropical Diseases Bulletin", 1975, 72(3). Reprinted at the request of the Department of Extra-Mural Studies, U.W.I. ▲

FOOD COMPOSITION TABLES FOR USE IN THE ENGLISH-SPEAKING CARIBBEAN

Caribbean Food and Nutrition Institute, 1974. 115 p. EC$5.00; J$2.00; US$5.00; £2.50.

The first edition of these Tables compiled and published by the Caribbean Food and Nutrition Institute is the result of cooperative effort over a period of several years, during which time the Tables have been expanded and now provide data for 661 food items. Most of the information has been taken from existing publications such as the USDA Handbook No. 8, the FAO Food Composition Tables for International Use and the INCAP-ICNND Tables for Latin America, but some unpublished data are also included.

The Tables are comprehensive in their coverage and, for some of the more commonly used foods, the amino acid composition and cholesterol, saturated and unsaturated fatty acid contents are given. This booklet will be most useful to nutritionists and dietitians but can be also highly recommended to anyone in the Caribbean interested in the nutrient composition of local foods.

A. Ashworth-Hill
W.I. Med. J. (1976) XXV, 194. ▲

FROM THE EDITOR

TRAINING FOR NATIONAL FOOD AND NUTRITION POLICIES

CARICOM politicians and pundits have among their visions for the Region a Plan leading to a greater degree of self-sufficiency in food through increased production. This imaginative and much-needed Plan must aim at serving not only the economic needs of the governments and people of the Region, it must also embrace nutritional considerations of overwhelming urgency in the context of the basic needs of the people.

A Regional Plan must necessarily be a form of compromise arrived at to satisfy in some measure the interests of 12 or 15 or maybe 17 different countries. National plans are, by definition, of greater critical significance to the individual countries and peoples concerned.

Every country operates on the basis of some plan - be it orderly or disjointed, written or unwritten, reasoned and logical or perhaps, divinely inspired! For a long time the concept of development planning, and planning in such sectors of Government as agriculture, education and health has been accepted and practised. Somehow food and nutrition continued to be taken for granted and no specific policy or planning took place at the national level.

As a regional centre, the Caribbean Food and Nutrition Institute set as its number one objective four years ago "the promotion of national food and nutrition policies in each of the countries served". The Institute perceived its promotional role in a many-faceted way, e.g., sensitizing wherever and whenever possible the administrative, technical and political leaders within the related disciplines, assisting in the collection, analysis and interpretation of data on the food and nutrition situation, providing information and advisory services on these topics.

Next in importance to the political will to enunciate and follow through a National Food and Nutrition Plan is the availability of a cadre of suitably motivated and qualified senior personnel in Government to assemble the body of a Policy and thereafter pursue its implementation. The conduct of training programmes was considered to be the activity with the greatest potential for exercising a telling influence on the development of food and nutrition policy, and this stimulated the Institute to hold a series of Workshops in Food Economics and Food and Nutrition Planning.

The fundamental objectives of these Workshops has been to provide the requisite orientation, basic knowledge and motivation to such persons, and, judging from the reports and the subsequent performance of those who attended these Workshops, there is reason to feel satisfied that this objective is being attained.

The two Workshops held to date have represented an exercise in cooperation, and multi-level communication that has successfully spanned a momentous period in the history of our Region. We very sincerely appreciate the tremendous support that has come from the governments that have participated and trust that the promise of an improved nutritional status for all our people will eventually be fulfilled.

THE EDITOR ▲

...malnutrition is not only a consequence of gross inequalities in society, but also a mechanism for maintaining them.

- Moises Behar

"Nutrition and the Future of Mankind"

International Journal of Health Services, 6:2:315, 1976.

FROM OUR READERS

THE EDITOR, CAJANUS

Dear Sirs:

I have learned of your publication, *Cajanus*, through my work in regional American food habits, and, in particular my studies of food habits and nutritional deficiencies in the southeastern United States.

I would very much like to receive *Cajanus*, and would also like to find out which, if any, of your back issues are available for purchase.

My congratulations on a continuing job well done, and I hope to hear from you soon.

John Charles Camp
Baltimore, Maryland, U.S.A.

I am at present a student of the University of Guyana doing the Certificate in Education. My option is Home Economics. From visits made to the Georgetown Hospital Library and from my tutor, I read some articles in the news magazine *Cajanus*.

I would like to become a subscriber to this magazine as early as possible, for this will enrich both me personally and my teaching of Food and Nutrition.

Claudia Marcus
Guyana

I have just been introduced to your newsletter *Cajanus* by a friend and I must confess that I find it very appealing and simple and, of course, very relevant to our food and nutrition problems in the Caribbean. I have gone to our local library to check for back issues, but sadly they have not heard of the magazine. I would be grateful if you would put my name on your mailing list and I will pass every issue around like I have done the one I have just read.

Thank you and keep up the good work.

Joseph Peltier
Dominica

I have been reading one of your *Cajanus* publications and I have found it very interesting and helpful to me in my Home Economics job. I am therefore, kindly asking you to include me on your mailing list.

Lynette Thompson
Guyana

I wish to indicate to you how valuable *Cajanus* has been to me as a student now pursuing a B.Sc. (Agriculture) degree at U.W.I., St. Augustine, Trinidad. I have been advised by the Institute Office that I should write you in order to receive your very informative newsletter. It is even more important to me, now that I hope to do a course in "Human Nutrition".

I would be happy if I could obtain any copies of *Cajanus* from previous years and would also like to be put on your mailing list for the future.

Fazal Hosein
Trinidad

I am a second year student in the Faculty of Agriculture at U.W.I., and I am very interested in receiving your newsletter *Cajanus*. The articles are of tremendous interest to me, both academically and otherwise.

Majeed Mohammed
Trinidad

▲

CAVIAR...the real thing?

For the fifth time in nine years, Soviet scientists have announced the development of artificial caviar. Similar announcements were made in 1967, 1969, 1970 and 1973, but it is not known whether the successive announcements represent successive developments.

In recent years, Soviet production of natural caviar has dropped drastically because of pollution of the Caspian Sea and its tributaries, and a lowering of the sea's water level.

According to the newspaper Moskovskaya Pravda, the ingredients of artificial caviar are milk albumin, casein, fish oils and fats, salt and water. The newspaper said the ingredients are passed through various chemical baths until 'caviar' jells tiny drops, which are then dyed.

- New York Times
2 May 1976

TOPICS AND COMMENTS

THE BOTTLE-FEEDING REVOLUTION IN LESS DEVELOPED COUNTRIES*

By Leonard Santorelli

A revolution without guns, flags, or slogans is profoundly changing the lives of many women and children in the Third World. It is the switch from breast to bottle-feeding.

The bottle is already firmly established in many cities and towns and is slowly taking hold in rural areas. Clearly, Western ideas on female emancipation and even on what constitutes a shapely figure are key factors.

Controversy has also been stirred by the role of the firms that sell the milk products. Attention has focussed on their sales techniques in places where water is scarce, conditions unhygienic, and costs of the products high.

In developing countries the social and environmental conditions are rarely adequate for feeding infants artificial milk.

A look at the background to the bottle-versus-breast debate in Asian and African countries shows that the bottle has gained a firm foothold, breaking down strong cultural and practical barriers in the process.

---

*Adapted from "The Jamaica Daily News", 26 June 1976.

The Western practice of putting a baby in a crib instead of its mother's bed where it had a constant supply of milk, has broken down feeding patterns and often causes the mother's milk to dry up prematurely.

Even so, many Kenyan women will pay up to ⅓ of their annual income on a product they could produce themselves and officials of international agencies in Nairobi say one of the reasons is that they believe this is the "modern way".

The problem is that poor families will try to economise by using less powder. A UNICEF official said: "If you buy a tin of milk powder for what is fundamentally a week's ration and stretch it to two weeks, the child is starving."

"Health authorities encourage mothers to breast-feed for at least a year because it is cleaner, cheaper and more nutritious."

Here is a more detailed look at the practice in the developing world:

NAIROBI -

Unofficial estimates suggest that as many as half of the babies in Kenya are bottle-fed. Four out of every ten tins of baby milk are sold in rural areas and the rest in towns, trade sources say.

A major company promotes its sales in Kenya with active radio advertising which begins "breast milk is best, but when you do not have enough your baby needs...(Brand name)".

But critics point out that this part of the advertisement has no music, whereas the later jingle "give your baby...(name) will make it grow strong and healthy" is catchy and has more impact.

Some health workers are also worried that instructions on the tin about hygiene and the correct strength of the mixture are written in English, which is not read by many nursing mothers in Kenya where the most readily understood language is Swahili.

Most medical authorities agree that conditions in the majority of Kenyan homes are not conducive to the hygienic mixing of milk. The water, for instance, is sometimes brought straight from a muddy pond and few uneducated women would understand the need to boil it.

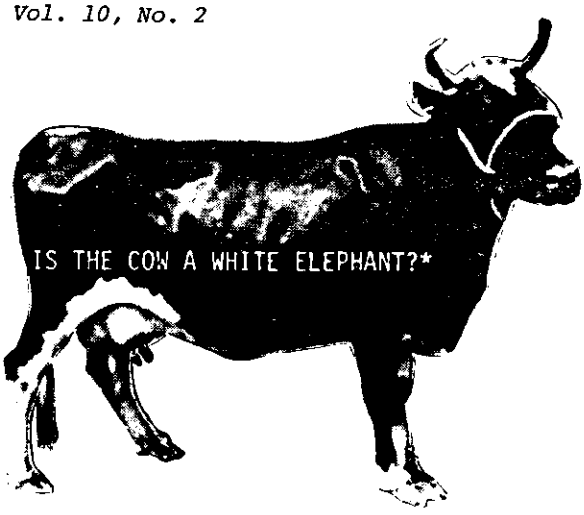
This, and over-dilution of powder result in a danger of bacterial infections and malnutrition.

LAGOS -

About 3 out of 10 Nigerian mothers bottle-feed their babies but many supplement this with the breast, according to health officials, and most are city dwellers.

Health authorities encourage mothers to breast-feed for at least a year because it is cleaner, cheaper and more nutritious. The shift to dried milk among poor families had resulted in more cases of disease caused by protein deficiencies in Lagos Children's Hospital.

"We found that most of the cases occurred because a tin made to be used for four days is used for a month", one nutritionist at the hospital said. ▲



By J.B. Kendrick, Jr.

As population and the need for food continue to grow, more questions are raised about the world's ability to feed itself, and about how it should be done. One line of argument holds that livestock production should be restricted or abandoned on the grounds that it is inefficient, wasteful and even immoral. The contention is that human beings should have priority over livestock, and that the eight pounds of grain required to produce one pound of beef should be consumed directly by man. Statements are made that a small reduction in U.S. meat consumption would release enough grain to feed many millions in the hungry world.

Most of the arguments that attack livestock production as the villain of the piece seem somehow incomplete. It is not made clear how the cost of planting, harvesting, storing, transporting and distributing these released grains is to be met. Other "grain drain" activities are not mentioned - for example, the enormous quantities used to provide food for the enormous pet population, or the more than one million tons used in the production of alcoholic beverages in the U.S. alone each year.

---

*From California Agriculture, April 1975. Mr. Kendrick is Vice President and Agricultural Sciences Director of the Agricultural Experiment Station, University of California.

But the major omission in these discussions is any reference to the unique capabilities and role of ruminant animals as human food resources. While most crops are limited to specific areas by climatic conditions, various kinds of livestock adapt to almost any climatic zone. Roughly 60% of the world's grazing land is unsuitable for cultivation and therefore, without animals, millions of acres of the earth's surface would go largely unused for the production of human food. Animals are the only converters of the forage-held carbohydrates and proteins into edible human food, and they do so with relatively little economic input. In addition, because of their unique digestive system, the ruminants (sheep and cattle are examples) are able to use as food many materials not consumable by men. They can convert to high-quality human food various agricultural wastes such as cornstalks, straw and sugar beet pulp. They are able to use unwanted materials such as waste paper and sawdust, and currently consume millions of tons of by-products from food processors, brewers and distillers which otherwise would constitute a serious disposal problem.

In addition to high-quality protein, vitamins, minerals and other nutrients, livestock provide many other by-products such as leather, wool, gelatin, lanolin, soap, and pharmaceutical supplies such as hormones, enzymes and cortisone. In many areas of the world, the animals ultimately used for food are also used to provide farm power.

While large quantities of grain are used at the feedlot stage in U.S. livestock production, about 70% of the final weight of the animal comes from forage. Principal grains fed to livestock are corn, oats, barley and sorghum - grains not widely used as human food. For example, our major feed grain is corn, but only about 3% of the U.S. corn crop is used for human consumption.

Without question, plants are more efficient producers of food per unit area than any form of animal production, but, as the foregoing suggests, there is some question about the concept and the degree of direct competition for food between people and livestock and about the notion that animal production is wasteful. In any case, it is unrealistic to expect the developed countries to give up grain-fed animal products or to expect world food supply problems to be solved if they did.

Traditionally, plant and animal cultures have been complementary, and as the pressure of food resources increases, there are good reasons to believe that animal agriculture will fill a vital role in the future. The potential for increased animal contributions to the human food supply is suggested by on-going research in improving efficiencies in feed conversion and reproduction, increased productivity of rangelands, and continuing developments in the utilization of the millions of tons of agricultural residues and by-products as animal feed. ▲

"One should cease from eating all flesh. There is no fault in eating flesh, nor in drinking intoxicating liquor, but cessation from them produces great fruit.

Meat can never be obtained without injury to living creatures, and injury to sentient beings is detrimental to the attainment of heavenly bliss.

There is no greater sinner than that man... who seeks to increase the bulk of his own flesh by the flesh of other beings."

- From the Hindu "Code of Manu"

WONDER WATER WEED?*

Man's attempts to conquer space have resulted in some unexpected by-products - from improved weather forecasting to non-stick saucepans - but perhaps none more unlikely than the development by the US National Aeronautics and Space Administration (NASA) of the water hyacinth as an answer to water pollution problems, and as a source of cattle feed supplement, fertilizer and bio-gas fuel.

The discovery of the many possible uses of the water hyacinth (earlier regarded only as a nuisance that clogged waterways) came almost accidentally. Concerned about the possible pollution hazards created by their own National Space Technology Laboratory (NSTL) in Missouri, NASA officials designated a team of environmental scientists, to devise some means of combatting pollutants, and, if possible, of reversing their effects.

The team began to investigate vascular plants (those equipped with a system of vessels that conveys nourishment from roots through leaves). Laboratory experiments showed that one, the water hyacinth, was able to absorb astonishing quantities of nutrients and pollutants from domestic sewage waste waters. Experiments with a fenced three-acre plot in a lagoon serving a residential area confirmed that the plants thrive on sewage-laden waters, and in so doing, purified the water.

Next problem: what to do with the eight-to-sixteen tons of plant growth produced per acre per day? The dried, ground plants were added to corn silage and fed to cattle at the nearby Mississippi State University agricultural experiment station farm, and at the end of a four-month study showed results comparable with a diet fortified with cotton seed meal and soyabean meal.

---

*From "IDRC Reports", Volume 5, Number 2, 1976.

Plants "fed" on industrial and chemical wastes, however, could obviously not be fed to cattle. But laboratory experiments demonstrated that one pound of plant refuse can produce about five cubic feet of methane gas - or an annual yield of about two million cubic feet of methane gas per acre. In addition, the residue from the gas production process can be used as an efficient fertilizer and soil conditioner. Thus the water hyacinth, instead of being an expensive nuisance, could become a profitable source of both feed, fuel and fertilizer.

Interest in the project is widespread, both in the US and elsewhere. The Sudanese National Research Council, for example, in cooperation with the US National Academy of Sciences, is currently studying the possibility of utilizing the overgrowth of water hyacinths in the White Nile River as a source of fuel, thus solving two problems simultaneously. ▲

SCUM SOUP!

Inhabitants of Chad and Niger produce a palatable food rich in proteins from a slimy "scum" scooped from the waters of brackish ponds. The scum, really a tangled mass of microscopic algae, is dried in the sun before being used as the basis for a rich soup-like dish known as dihe.

- Tony Loftas

Ceres, Sept. - Oct. 1969

EVALUATING DIETS - THERE IS NO PERFECT METHOD*

By Roslyn B. Alfin-Slater and Derrick B. Jelliffe

In nutrition, it is often important to evaluate diets of individuals or communities to detect excessive intakes (especially calories or cholesterol) or, in most parts of the world, inadequate levels of nutrients in the diet - for example, protein, iron, vitamin C, etc.

For the educated individual, the calculation of intakes of nutrients for each meal and for each day is not very difficult, largely because of personal motivation and because simplified diet tables are easily available, especially those showing the calorie composition of foods.

In communities, other methods have to be used. These are often rather approximate, but, if used on large numbers of persons, they give a general picture of the nutritional situation. Three methods can be employed, either singly or in some combination. These are the recall, the inventory and the weighing methods.

RECALL

The recall method seems very simple, but has obvious defects. It consists of asking individuals what they have eaten or fed their babies during the last 24 hours. Difficulties are obvious, including lack of proof, problems with assessment of quantities, poor memory and conscious adjustment of the response up or down. As with other methods, this test gives the best results in areas where the diet is limited and includes only a few types of food, as in most developing countries. At best, it can provide a general picture - useful, but not at all precise.

---

*Reproduced from Los Angeles Times Home Magazine, 12 December 1976.

INVENTORY

As the name suggests, the inventory method consists of recording the foods available in a household at the beginning and end of a set period, together with information on foods purchased and plate waste. From these figures, the food usage of the family can be calculated. The method depends on the cooperation of educated householders.

WEIGHING

The third approach is the weighing method. It is the most complicated, difficult and time-consuming of all, but gives special insights. Briefly, it consists of noting and weighing the actual food items as they are used in the preparation of meals. This means that an investigator has to be with the food-preparer all day, from early morning until late at night, for from three to seven typical days (not holidays or special occasions).

The results of this method give the exact amount of foods used, their nutrient value can be calculated from food composition tables, which list the nutrients present in known weights of edible portions. Results for families can then be calculated and compared with RDA (Recommended Daily Allowance).

A basic problem is in knowing how the foods eaten have been distributed within the family, especially among children. The most difficult group to assess are young infants, as their food intake varies and should be increasing slowly. Also, if breast-fed, it is not easy to measure the volume of mother's milk taken.

In nutrition surveys, "food consumption" is usually included, in some form or another. Results are always approximate, but still valuable. Ideally, the information obtained needs to be

gathered at the same time as are clinical and biochemical studies of the population. In fact, diagnosis of the nutritional situation of a community is similar to a criminal investigation, which is usually based on combined evidence from clues from many different sources. ▲

NEW FOODS FOR A HUNGRY WORLD

A US Government report suggests adding another 36 species to the list of only 20 which are already cultivated as major food crops. Newcomers include an Andes herb called quinua, whose grain fed the Incas; an Amazon palm with oil like olive oil; and the amazing tamarugo, a leguminous plant that grows on salt-covered Chilean deserts and can feed almost as many sheep as ordinary pasture.

- Sunday Times
23 January 1977

WHEAT SUBSTITUTION IN THE CARICOM REGION: THE CASE AGAINST AN IMPORTED LUXURY*

by

Dr. Omawale

The diets of nearly every people revolve around one particular food, or small group of foods. Often they are cereals: rice in the Far East, wheat in the Near East, maize in Latin America, millet in the African Savannahs. They may also be roots or starchy fruits: cassava or yams in West and Central Africa, the sweet potato in the Pacific, and plantains or bananas in East Africa.

These are the staples, and they supply the bulk of a people's energy (calories) and protein. But staples are also laden with religious, social, historical and mythological significance. One nutritionist calls them "cultural superfoods."[1] In the Far East, for example, one may be greeted with the expression "Have you had your rice today?" The identification of a society with its staple can be very great.

Acting in a logical fashion, a society would choose its "cultural superfood" on the basis of hard ecological and economic criteria. Matching staples to societies should be an easy matter. Wheat, for example, does not grow well in the tropics; it must be imported at a considerable expense. So wheat is obviously a staple for temperate regions. The root crop cassava, on the other hand, is indigenous to the tropics.

**Reproduced from Pan American Health, Vol. 8, No. 3, 1976. Dr. Omawale has served as a Short-Term Consultant to CFNI on several occasions.*

[1]*Gurney, J.M. (1973) "Nutrition Facts on Staples". Cajanus VI(4), 213-16.*

But societies do not always make their choices on the basis of logic. For example, the people of the English-speaking CARICOM countries acquired the practice of eating wheat during the colonial encounter. Wheat bread had social status. It was the proper, civilized thing to eat. Unfortunately, however, nobody thought to develop the agricultural methods needed to grow it under local climatic conditions.

So in the Caribbean today, the favoured staple is wheat. In the form of bread and biscuits, it contributes as much as 26% of dietary energy and 31% of protein in parts of the Caribbean.

At the same time, these wheat imports in 1975 amounted to over US$44 million for a population of less than 5 million. With a per capita income of about US$656, the people of the Caribbean can ill afford such a luxury. The economic, and ultimately the social and nutritional consequences, are very great.

The search is on for a staple to substitute for wheat that can be grown in the Caribbean, and at the same time be nutritionally and socially acceptable.

With the cooperation of the Pan American Health Organization, the Region's governments are developing food and nutrition policies that deal with this concern. Laying the groundwork for such policies, the Caribbean Food and Nutrition Institute and the Region's governments have already made surveys of the diet composition of a number of territories. CFNI has also initiated a useful debate about nutritional issues related to wheat substitution. As we will see, some countries are already implementing programmes.

The food crops which hold promise as replacements for wheat in the Caribbean include rice, cassava, sweet potato, yam, plantain or banana, dasheen[1] and tannia[2].

Both rice and bananas are well developed export crops grown on a large scale with ample inputs, such as fertilizers. Guyana, for example, considers its rice an important earner of foreign exchange. These crops are therefore unlikely to make a major contribution for domestic wheat replacement in the near future. This is somewhat unfortunate since rice happens to be one of the best substitutes for wheat in bread-making.

In Trinidad, a vigorous research programme at the University of the West Indies has determined that with mechanization and proper extension programmes, the productivity of sweet potatoes and yams could be greatly increased. Some varieties of these root crops already have high consumer acceptance, giving them good prospects for wheat substitution.

In Guyana, cassava, now grown mainly by the poor subsistence farmers, has been selected as the most promising candidate for a wheat substitute. For one thing its productivity is high. For another, cassava can tolerate environmental extremes, and keeps producing even if relatively neglected. It does not require expensive drainage or irrigation. Therefore, cassava has traditionally been the crop of the small subsistence farmers. Large numbers of these same farmers could remain the producers of a much larger crop in the future. They would send their cassava to a few locally sited mills, thus avoiding in this way the large-scale, highly mechanized cultivation, which is impossible for them.

---

[1]*A variety of the root crop coco or taro, of which the eddoe is another well known type grown in the Caribbean.*

[2]*Another member of the taro family.*

AS NUTRITIOUS AS WHEAT?

People still have their doubts. Will a wheat substitute be less nutritious? Would its adoption mean giving up traditional baked goods? Will it really be sufficiently inexpensive?

Nutrition is unlikely to suffer. The major nutritional problem in the Caribbean is energy (calorie) deficiency, which results from insufficient food intake. Protein deficiency is often present as well, but would disappear if the same food were eaten in quantities large enough to satisfy the energy requirements. Moreover, if energy is needed, and proteins are available, the proteins will probably be used preferentially to provide it. Scarce proteins will have, therefore, been used to do what cheap calories could have done.

Instead of worrying primarily about proteins in a diet, it would be better to strive for a balance between protein and energy. We should enable people to grow or buy enough food to satisfy their energy requirements: this will go a long way towards solving the protein problem. Recent work has shown that foods like rice, yams and some varieties of sweet potatoes, which are not generally considered protein foods, have a balance of protein and energy good enough to satisfy human protein requirements if eaten in quantities that satisfy energy needs. Infants and people recovering from illness, who need more protein than others, could receive additions of small quantities of legumes which are sufficient to produce considerable increases in the protein available in these foods. Bananas and cassava, which are quite low in protein, would be suitable for composite flours. Calculations in Guyana suggest that even wheat flour consisting of 10% of cassava has an acceptable balance of protein and energy. Even more cassava could be substituted if a legume like soyabean or black-eyed pea is included in the composite flour.

AS CHEAP AS WHEAT?

When retail prices alone are considered, some possible wheat substitutes, such as root crops, may at first glance appear expensive in the Caribbean. During the last quarter of 1975, subsidized wheat flour was the cheapest source of calories in 11 Caribbean countries; cornmeal was the cheapest in 3 islands, while cassava flour, green bananas and breadfruit were the least expensive in one country each.

But as indicated, wheat is subsidized in the Caribbean; the government funds being used to keep the price artificially low could be spent on much needed development programmes. In addition, the present prices have little relation to potential for the future, and the future is quite important in food and nutrition planning. At present, for example, rice in Guyana typically produces 266 Kilo Calories per G$ per day, while cassava yields only about 32 Kilo Calories per G$ per day. But rice - as well as that other important cereal, maize - is already highly bred and developed, leaving little room for improvement. On the other hand, recent trials with new cassava varieties have shown that productivity could increase five to seven times over the old varieties, even when grown with traditional technology on poor soil. Cassava, therefore, has considerable development potential; it can be much cheaper in the future than it is now.

Some people in the Caribbean advocate highly mechanized staple production in order to replace wheat quickly and economically. But such a policy could well be labour displacing, or at any rate not labour absorbing. We must pay close attention to the social consequences of wheat substitution. The tragedies of India's Green Revolution, where big farmers have grown richer at the expense of the small farmers, must be avoided.

In the Caribbean the poor have traditionally grown root and other food crops, as opposed to the export cash crops like sugarcane and rice. Given credit, intermediate forms of technology, and other extension services, this group would not only increase production and productivity, but also earn higher incomes that would lead to nutritional improvement. Moreover, their surplus labour would be put to work.

During 1976, Guyana began attempts to bring into cultivation an additional 600 acres of land each month for the production of cassava flour. Small farmers are encouraged and enabled to participate in this programme by providing them with free planting material, credits for clearing and cultivating the land, and a guaranteed market for their produce. Mills are being set up in rural centres near the production areas, and the cassava roots are expected to provide flour for 10% wheat substitution, in addition to waste products that could be converted into animal feed. In the meantime, tests are proceeding to determine how satisfactory food products can be made. These include noodles, which have not as yet been tested, and the whole range of other traditional products like *roti*[1], dumplings and cakes.

WILL PEOPLE ACCEPT A SUBSTITUTE?

It is true that "old habits die hard". The consumption of wheat is one such habit in the Caribbean. Here, almost every meal or snack includes wheat. Fortunately, many composite flours can make bread, pasta and pastry products quite similar to the traditional wheat commodities. In Trinidad, a blend of flour parts of wheat to one part of sweet potato went totally undetected by bread consumers. At a seven to three ratio, only a very small number could tell it was not pure wheat bread. Wheat-cassava

---

[1]*An item common in the diet of the East Indian population in Guyana and Trinidad, usually made from curried meat, chicken or chick pea ('dhal') wrapped in lightly fried dough.*

blends at four to one have also proven successful for cakes in Guyana. Bread from the same mixture has a slightly different taste from plain wheat bread, though it is not unpleasant. But this bread did tend to stale rapidly, developing a sour smell and taste within 48 hours after storage in plastic bags. It has been shown in other countries that small quantities of preservatives could solve this problem.

Proportion of Protein in Wheat Flour and Composite Flours

Bread Composition	Proportion	Protein Content	Net Protein Utilization
Wheat flour (white)	100	11%	37%
Wheat/rice	70/30	10%	41%
Wheat/rice/soya	70/27/3	11%	46%
Wheat/rice/soya	70/25/5	12%	45%
Cassava/soya	80/20	11%	55%

Source: de Reuiter, D, "The Use of Soyflour in Composite Flours". Institute for Cereals, Flour and Bread TNO, Wageningen, The Netherlands (unpublished).

If the wheat substitutes exceed 30% in a composite flour, as is contemplated, changes in baking technology will be required. The industry will have ample time to make the necessary adjustments, since large-scale production of the substitute crop will probably take a number of years. For example, a 10% substitution of wheat imported by Guyana in 1975 would have required 23,000 metric tons of cassava, but the total 1973 cassava production amounted to a mere 14,000 metric tons.

In the absence of a colonial experience, the Caribbean would have developed an indigenous staple with suitable products and appropriate technology. Why not break with the past now, and develop such products and technology, suppressing our longing for

wheat products? Why not raise our social and political consciousness, and subordinate personal wants to social needs? Development certainly cannot proceed rapidly in the Caribbean while badly needed foreign exchange is spent on non-essential food imports. During the current decade, Guyana has increasingly placed restrictions on non-essential imports like apples, which once had a central place on every Christmas table. There has been little resistance to such programmes, and other countries are moving in the same direction, some faster than others. It is only a matter of time before wheat ceases to be an important part of the Caribbean diet.

In the final analysis there is no opposition for the Caribbean. Foreign exchange must be spent on essential capital equipment to speed the process of development. Food for the Region can and must be produced largely within the Region. ▲

"Language can get in the way of genuine communication with poor people. When we work with a poor person and we are Dr. Jones, Mrs. Harper or Miss Baker and she is Sally, we have perhaps said something more, haven't we?"

- *Rosalie Tryon*

Public Health Currents (Ross Laboratories) 15(no. 3):1, June-September 1975.

STRATEGIES IN THE NUTRITION EDUCATION OF PATIENTS*

by

B. Andrea Okwesa

Doctors in orthodox medical practice are, on the whole, trained to assume that the majority of illnesses with which they deal have virtually no connection with nutrition. Instead, nutritionists and dietitians tend to be the ones who assume the greater share of the responsibility for informing the public of the need for sound nutritional practices and showing people how to improve their diets and ultimately, the quality of their lives.

There is much justification for specialist functions within the health care team, with the nutritionist/dietitian having key responsibility for the patients' diet and general nutritional status. However, while the major individual in promoting, initiating and coordinating nutrition education should be the qualified nutritionist/dietitian, she should be assisted by the doctor and other members of the team who would also play an important role in the patients' nutrition education.

NEED FOR NUTRITION TRAINING IN MEDICAL SCHOOLS

There is currently a great deal of interest in nutrition among laymen and we also recognize the importance of nutrition education in meeting the nutritional needs of all sectors, not only lower-income groups, but also the more affluent who are also exposed to certain sorts of malnutrition. The vast plethora of available food items on our supermarket shelves, the impact of

---

**Based on a paper presented to the Paediatric Association of Jamaica: Monthly Meeting, 24 September 1976. Mrs. Okwesa is Media Officer/Editor at the Caribbean Food and Nutrition Institute.*

conflicting mass media advertising messages, all underline the importance of nutrition education for the survival of modern man. A great deal of the responsibility for the dissemination of nutrition information therefore rests on the shoulders of the medical team. The nutrition training of members of the health profession should come early in their medical school career in order to enable students to develop a nutritional approach to illness and disease, and to concentrate, in addition to treating and curing ill patients, on preventing illnesses through the maintenance of good health and nutritional well-being.

The key person in promoting, initiating and coordinating patient nutrition education should be the professional nutritionist/dietitian, assisted by other members of the health team.

THE DISSEMINATION OF ACCURATE NUTRITION INFORMATION

Numerous opportunities exist within the doctor's day-to-day work to augment and reinforce the nutritional knowledge, both of himself and other members of the team. The clinic, doctor's office or hospital ward - wherever doctors meet with patients -

provides an appropriate environment for informal, face-to-face contact with patients. In such situations, doctors can convey relevant nutrition information and also demonstrate their concern in this important aspect of patient care. In their relations with medical students, doctors can, by their own example and teaching, reinforce the students' orientation to and interest in nutrition, and contacts with other members of the health team will provide the opportunity for an interchange of ideas and meaningful dialogue.

Such points of contact will enable members of the team to ensure that the nutrition information they disseminate is consistent, correct and comprehensive as well as coordinated.

The onus rests on each member of the team to demonstrate a committed and responsible attitude towards nutrition education, viewing it as an integral part of total patient care. Each member of the team must develop and update the nutrition education gained through training, in exactly the same way he would update his knowledge of new drugs, for instance. Often a doctor will be confronted by a patient who has read some article on nutrition in a magazine, or a new book postulating a revolutionary theory. The doctor should be able to verify, authenticate or disprove the facts presented and to supply reliable contrary evidence if necessary. Often a doctor is asked his opinion on current food fads, "health foods" and examples of nutritional quackery. While he might show a great deal of concern and indignation over the rise in such unorthodox theories, he should ask himself whether he might not be indirectly responsible for the misuses and misinterpretations of nutrition to which he so rightly objects.

CHANGING FOOD ATTITUDES AND PRACTICES

In the Caribbean today the wide prevalence of malnutrition, gastroenteritis and other nutrition-related diseases underline the importance both of nutritional improvement and of effective

communication techniques. Raising nutritional status involves bringing about desirable changes in people's attitudes towards food and eating, the acceptance of new and unfamiliar ideas and practices, the modification of existing food habits and ultimately changes in people's food behaviour, coupled with a new awareness of how to promote and maintain nutritional health. Because food attitudes and habits are so deeply rooted in the phyche and culture of an individual or a community, because food satisfies not only the pangs of hunger but also deep emotional and psychological cravings, changing food habits is a difficult proposition. Ask a person to change his toothpaste or hair dressing and he will need little persuasion. Introduce a new food product that is unfamiliar or unwelcome, or ask a patient (e.g. a diabetic) to omit certain foods from his diet and you will encounter a whole host of counter-arguments or formidable opposition and resistance.

To promote behavioural change in food and nutrition, especially in contexts where strong cultural, traditional, social and psychological considerations prevail, therefore, requires a keen and accurate knowledge, both of the patient and of the social milieu in which he operates. Issues such as food production, habits, and preparation; traditional myths and taboos related to food; and the seasonal availability and price of certain foodstuffs will also influence the kind of information conveyed. All these are relevant before sensible and persuasive messages can be developed and diffused to the right audience.

COMMUNICATION STRATEGIES FOR NUTRITION EDUCATION

It is crucially important to formulate appropriate communication strategies for patient nutrition education. The design and development of messages geared to the needs of particular target-groups is usually the domain of the trained communicator working alongside professionals from related disciplines. However, where

no such person is available and no training in communication skills provided for personnel in other disciplines who have an information/education/communication component in their work, the onus falls on the members of the health team to improve their communication skills and devise effective strategy for dealing with their patients.

We may define "strategy" as a long-term plan of action which is realistic, feasible and adjusted to available long-term resources. It is most effective and useful as a team-work activity whereby each member of the team (e.g. the health team) is assigned a specific role, also interacts freely with the others in matters of joint interest and concern, such as the nutrition education of patients. In order to treat illnesses, doctors first make a diagnosis of the patient's condition before determining the most effective therapy. To devise and construct an appropriate strategy for patient nutrition education, a diagnosis of the problem is also necessary to see where the best opportunities exist for efficient communication action and to help the practitioner understand what could be done to achieve the desired objective. The objective may be assessed in terms of what is to be achieved, viz., awareness, general knowledge or detailed information on nutrition, motivation to improve eating habits, reassurance against possible side effects of a certain diet, acceptance of a new diet or behavioural change. Whatever it is, the objective must be meaningful, practicable and desirable and must be based on nutritional priorities as determined by an analysis of the problem.

Before developing appropriate nutritional messages the communicators need to be aware of the community's nutritional profile, and the character of the audience. Whether they be illiterate rural people, members of the educated elite, or opinion leaders will greatly influence the nature of the information and the form

in which it will be presented. It is important for us all to be aware of the perceptual difficulties which prevent the diffusion of knowledge among people and the many barriers to successful communication which exist. We may cite among others illiteracy (which is so prevalent in our society and extends beyond mere inability to recognize verbal and numeral symbols), the influence of traditional cultures, folk beliefs and socio-economic or ecological factors such as poverty or inadequate housing and facilities. All these can effectively militate against successful communication and need to be taken into account when developing messages. Doctors should not "talk down" disparagingly to their patients but must attempt to make their explanations as simple and uncomplicated as possible with due regard for all potential barriers to communication which might arise during the counselling session.

The principle involved in the doctor/patient encounter is to encourage the patient to think for himself about his condition and the nutritional implications, realize that change (i.e. a specific treatment or diet) is necessary and be fully involved in his treatment rather than being merely told what to do. Patients must fully participate in their health care and finally adopt new attitudes and practices because they have a sincere desire to do so - not necessarily because the doctor says so. In exactly the same way the patient has to agree to an operation, he should be given a chance to agree to the doctor's choice of treatment and diet - but only after the information has been diffused and proper awareness, understanding and acceptance have taken place. This type of communication between doctor/patient is a significant first step towards more effective health care, and is especially relevant in paediatric medicine. One of the virtues of Cicely Williams which led to her ultimate discovery of kwashiorkor was her ability to communicate with the mothers of her patients.

It was through listening to them, hearing their views and letting them express themselves freely that she finally came to understand what the disease really meant.

An important element of the strategy would also be to investigate current food and nutrition programmes in government departments and agencies, other organizations in the community and in the media to ascertain the effect of their efforts, their spheres of influence and the possibility of coordination with respect to policy, priority, implementation and cost. This will eliminate any conflict of information which could occur, also duplication of effort and, of course, help to reduce costs. Mass media channels, for example, while of little demonstrated effect in bringing about changes in people's eating habits unless linked with other communication channels, are invaluable in creating awareness and getting information to large numbers of people in a short space of time. Medical practitioners should not be discouraged, through lack of professional mass communication expertise and skills from making use of such channels of communication for nutritional improvement. The radio doctor heard around 8.30 a.m. on a Jamaican radio station has helped a great deal in clearing up misconceptions and directing people, who would not otherwise make the effort, towards reliable sources of further information and advice. The medical practitioner, rather than assuming the ultimate responsibility for nutrition education along with the rest of his team, should explore and liaise with all possible channels of communication within the community including the mass media, such as the school system, the community extension system, decision-makers, politicians, and other opinion leaders in society.

Numerous possibilities exist for joint and cooperative action with the media and the wider community, such as talks to and meetings with various community groups, "rap" sessions and

interviews on radio and T.V., and articles in newspapers, not only by the doctor himself but by other members of the health team. Medical personnel need to sit on committees formed of nutritionists/dietitians in order to make their own specific inputs, and vice versa. Representatives of medical associations need to collaborate with interdisciplinary community groups working towards nutritional improvement.

Nutrition education should be a continuous process in the day-to-day interaction between patient and health team. Each member of the team should reinforce, supplement and support information given to patients by another member of the team, as far as his knowledge and skills will allow, given the necessary facilities and resources. Where possible, verbal instruction should be extended by practical demonstrations and also by available visual materials as reinforcement to the direct face-to-face contact between patient and practitioner. Patients should not be denied the opportunity of asking questions or discussing problems with the members of the team: this can serve the dual function of enabling the doctor to estimate the extent of the patients' knowledge as well as giving the patient the opportunity of gaining more knowledge or understanding concepts more clearly.

The doctor and other members of the health team are effective agents for nutritional improvement and can positively help patients gain awareness, acquire knowledge, modify existing attitudes and ultimately improve their nutritional status. The most important element in the strategy directed towards helping a patient to improve his nutritional practices and consequently his health status is continuous encouragement, motivation and support by the members of the team, strengthened by patient involvement and the coordinated activities of community organizations in the health and food and nutrition sectors. ▲

PRACTICAL FISH FARMING: MAKING A START*

by

David Clayton

All agriculture systems rely on water supplies of some sort to allow plant growth, and in many areas it is necessary to store water for long periods so that it will be available during times of shortage. In others, the water may be brought from nearby rivers through irrigation channels. Wherever water is available it is possible to use it for fish culture as well as agriculture.

A simple approach to fish farming which will work anywhere, will form the foundations on which more efficient techniques can be developed as experience is obtained. For this type of beginning, it is not necessary to spend large sums of money, since all the materials are easily obtainable in most regions. Further development, resulting in higher yields of fish, can be achieved through a process of learning how to work with fish and will be stimulated by information on how efficiency can be increased by introducing new techniques which have been learned from practical fish farmers elsewhere.

BASIC PRINCIPLES

1. Food

The value of fish as food lies in the high level of protein in their bodies. Fish only grow if they can obtain more protein from their food than the amount which they need simply to continue living. Fish which eat starchy vegetable materials containing

---

Reproduced from Appropriate Technology, Vol. 3, No. 2. The author is a Fisheries Consultant.

little protein consume very large quantities of food in order to grow larger, and most of the starch and cellulose is undigested. Fish which eat foods with a high protein level do not require large quantities of feed and waste very little of the food which they eat.

Fish pond culture carried out under controlled conditions is a means of making available a source of high-quality protein at varied locales and at a lower cost.

All agricultural products contain protein, even the parts of the crop which are normally regarded as wastes. They also contain simpler chemicals. Protein is only useful as a food for animals, whereas the simpler chemicals are only taken in and used by plants. Therefore materials with a higher protein level should be fed to fish, whilst low protein wastes, such as dung, are better used as fertilizers in fish ponds. Provided the water is not badly contaminated by unused feeds or excessive fertilizers, fish will live and grow in it. Some types of fish are more tolerant of water contamination than others. The most tolerant types can usually be more crowded together and given more food, so that efficiency is increased.

Finally, it is better to grow a smaller number of large fish than a huge number of very small, since larger fish are usually more resistant to poor water conditions and are easier to market.

2. *Ponds and Cages*

Fish can be reared in still or flowing water. In still water, the water is fertilized to develop a heavy crop of aquatic plants and small animals which will provide some of the food for the fish, but if too much fertilizer is used then the water will become too fouled and the fish will die. Small ponds are easier to control than large ones. In flowing water, fertilizers are not used since the water is constantly changed, but fish have to be prevented from escaping from the culture area and nets, screens or cages are necessary.

Fish can be reared in any sized ponds. Cages can be made of any materials which are locally available, e.g. bamboo, chicken wire, old fishing nets, or oil drums. Oil drums should have holes punched out from the inside so that there are no sharp metal edges inside to damage the fish.

CHOOSING THE FISH

Any local types of fish which are commonly eaten should be tested for their suitability for farming. First find what feed-stuffs are available in your area. Any sort of vegetable wastes, such as grain husks, spoilt grains, mill sweepings, oil seed cakes, soft leaves, spoilt vegetables and fruits, etc., can be used as fish food. Collect as many individuals of each type of fish (except those you know are fisheaters) as you can, and put them into any small pond where you can observe them clearly, or into cages in a river or canal if there are no ponds nearby. Test a small quantity of each type of food which is available locally by

putting it into the pond or cage and see which fish will eat it. You may need to try each food for several days until the fish become used to it. Once you know which food is acceptable to different types of your local fish you are ready to begin fish farming.

THE FIRST FEW WEEKS

From your feeding trials, decide which combination of fish and feedstuffs looks promising. The best type of fish for pond culture will be those found naturally in stagnant water, small individuals will be easily available, and will feed on a variety of foods. If the fish grow well, they should grow from a few centimetres in length to about ½ kg. in weight in one year. To start with, stock 2,000 small fish per hectare of pond, and feed 5 to 10 kg. of feed each day for every 100 kg. of fish in the pond. If after three or four weeks, the fish are feeding well and the water is still sweet, use one ton of animal dung for each hectare of pond to increase the fertility of the water. Place this in heaps in the water along the upwind side of the pond. Within a week or so the water should become more cloudy, and green in colour as tiny plants begin to multiply in the pond. If the fish continue to feed and show no signs of distress after about a month, add another ton of dung per hactare monthly for the next few months. Don't forget to feed more food daily as the fish grow.

EFFICIENT DEVELOPMENT

Rearing two or three types of fish in a pond in the first season will give you more information than using only one type, so you can compare the growth of each with that of the others. In this way you will soon be able to decide on how to continue the next season. For example, you might concentrate on rearing one or two types of fish, select the feedstuffs which they seem to

prefer, stock more fish, and use more feed or fertilizer. Each year, as you learn more about your fish, you will be able to improve your methods until you have reached the most productive level which is possible with your type of fish farming system. Remember that even the most productive and profitable fish farming systems in existence today were developed originally by small-scale farmers who experimented as simply and cheaply as possible.

DEVELOPING A CAGE CULTURE SYSTEM

Selection of the type of fish for cage culture is essentially the same as for pond culture. However, since the water is continually changed by natural currents, no fertilizers are used, and fish which do not tolerate stagnant water can also be used. While foods from animal sources, such as offal, dried blood or unusable carcasses are not advisable for use for pond culture by inexperienced fish farmers because of the danger of serious pollution, they can be used to feed carnivorous fish in running water cage culture.

SUPPLIES OF FRY FOR THE FARMER

Sooner or later the fish farmer will face the problem of getting enough suitable young fish to stock his farm regularly. Some fish will only spawn in fast flowing rivers, so when beginning fish farming it is better not to try to rear these unless the wild fry can be caught from the rivers in suitable numbers.

A special spawning pond may be needed to obtain fry. Many types of fish can be spawned in ponds. Some will only do so during seasons of flooding - they can often be stimulated to spawn successfully by keeping large breeding fish in a small pond in the centre of a larger dry pond. When the natural spawning season starts the larger pond is flooded, so that fish can swim into the shallow water to spawn.

Some types of fish will lay their eggs on sand, others on stones or vegetation, so if you aren't sure which your fish prefers, allow plants to grow on the bed of the large pond whilst it is dry, then clear part of it and place a few mounds of stones in it before flooding. Watch which fish lay their eggs on what type of material, so that next year you can give them the type they prefer. Sometimes fish may need extra encouragement to spawn; splashing and beating the water with branches at night often persuades them to do so.

The adult fish must be removed from the pond after they have finished spawning. Leave the spawning pond flooded, and fertilize lightly to encourage the growth of the tiny animals which the young fish will feed on when they hatch. One ton of dung per hactare will usually be sufficient for this.

When the fish are able to feed on their normal foods, they can be put into the growing ponds. In each pond or cage, place about twice as many young fish as you expect to harvest at the end of the season. Do not put young fish in the same pond as adult fish. Even if the large ones don't eat them, they will prevent them fron getting enough food.

The objective of fish farming should be to integrate it into existing agricultural systems, and not to try to replace agriculture unless there are special reasons why this would be desirable - for example, inadequate protein supplies or land unsuitable for agriculture. Fish farming is not a magic road to instant riches and total food sufficiency, but it can play a far more important role in feeding the people than is generally recognized. ▲

CAN NUTRITION SELL?*

by

James E. Austin

Can nutrition considerations serve as effective forces in food marketing? This question should be of proprietary interest to professionals who are involved in or have a relationship with nutrition's many facets.

If the answer is, "yes", that means consumers perceive nutrition as a priority area of concern and a key to their food purchasing behaviour. This, in turn, would suggest a marketplace need and therefore a marketing opportunity. The inputs of nutritionists would be critical to fully meeting this need and developing this opportunity.

However, the traditional answer of food marketers generally has been a strong, "no!" Efforts to market foods primarily on a nutrition basis in the past had not met with much success. This dismal tract record led many marketers to shy away from the nutrition dimension as a part of their marketing product development efforts.

As a result, the inputs of nutritionists were either not sought at all by food manufacturers or were relegated to minor roles. The inputs of food technologists, dietitians, home economists, biochemists - and food marketers - tended to focus more on taste, texture, appearance, cookability, and storability than on the intangible quality of nutrition *per se*.

---

*Adapted from "The Professional Nutritionist", Vol. 8, No. 3 - Summer 1976. The Author is Associate Professor, Harvard Business School and Lecturer in Nutrition Policy, Harvard School of Public Health.

Focussing on the products' basic characteristics - those obvious to the consumer - is indeed a necessary condition for effective marketing. Consumer acceptability is determined by a whole series of product attributes, not just nutritional value. Additionally, the acceptance is critical to meeting nutritional needs because "food is not food until it is eaten".

Still, the nutritional dimension of food has been relatively neglected by the food industry. The neglect, however, appears to be disappearing because the nutrition factor has become of more concern to public policymakers, consumers, and to perceptive food manufacturers.

It has become quite obvious that nutrition awareness finally is increasing among all of these groups. Consumers increasingly have focussed their attention on nutrition. Food is highly visible, of course, and costs and quality affect all families. It is an ideal topic for consumer advocacy groups. The world food crisis, rising food prices, and growing distrust of the food industry have all combined to generate greater consumer concern with the quality and price, i.e., the value of food.

Even with the recent softening of food prices, many consumers appear to be continuing to switch from "junk" foods of low nutritional value to more basic items.

Criticism of the food industry, particularly by the key market segment groups of younger, more educated, and higher income consumers, has doubled in the past decade. Consumers' expectations of food quality are rising and must be met if further dissatisfaction is to be avoided.

Nutrition interest is up. But what about the consumers' understanding of nutrition?

Consumer nutrition knowledge appears to be greater than food marketers' traditional perceptions. Yet confusion and misunderstanding still is prevalent among consumers. This also holds true for food marketing managers and public policymakers. Interest exceeds knowledge.

The resulting ignorance gap represents a problem for all. It can lead to misdirected or even exploitative food marketing efforts and misguided (although well intentioned) government regulatory actions.

Inadequate nutrition knowledge is understandable. In addition, the existing flow of nutrition information to consumers, managers, and government officials is frequently fragmentary, inconsistent, and unintelligible to lay people.

Despite this knowledge barrier and the traditional food marketers' bias against nutrition, companies have increasingly begun to respond in various ways. Several major food manufacturers [in the U.S.A.]* have formulated and issued explicit corporate nutrition policy statements. Many companies have begun to nutrition-label their products. Nutrition research budgets are expanding.

New nutrition-oriented products have begun to emerge from product development departments. Example: Major food companies have launched textured vegetable protein-based products that stress economy, taste, and nutritional value - especially the cholesterol-free characteristic. Similarly, cholesterol-free egg substitutes have appeared in stores. Ready-to-eat cereal manufacturers have accelerated their advertising of the nutritional characteristics of their products.

**Editor's note*

Supermarkets also have increased their nutrition-oriented consumer activities. Several chains have undertaken nutrition education, nutrition labelling, and have organized consumer advisory boards. Even fast food chains have begun to analyze their food nutritionally, undertake vitamin fortification, and promote nutritional themes.

This increased food industry movement into nutrition has been a result of mixed factors:

- the necessity of bending to government or consumer advocate pressures
- a desire to meet perceived corporate social responsibility
- a need to match competitors' actions
- an effort to develop a marketing opportunity

This mounting experience in nutritional food marketing leads one to conclude that the answer to the opening query about nutrition's saleability is a qualified, "yes".

By itself, nutrition will sell little. But given reasonable organoleptic and usage characteristics, and competitive pricing, the nutrition dimension appears to have considerable importance for consumers. It could play a deciding role in their future purchasing decisions for various types of food products.

The increased emphasis on nutrition is not a fad. It has become institutionalized in national legislation and by various programmes. Nutrition is firmly on the minds of consumers and on the dockets of public policymakers.

The real question for food marketers (and nutritionists) is no longer whether to deal with nutrition, but rather *how* to do it. (The more perceptive companies have already grasped this reality and are approaching nutrition as an area of opportunity.)

To fully realize the potential will require greater inputs from professional nutritionists. Fortunately, the heightened corporate awareness of and interest in nutrition has created a favourable environment in which nutritionists may play a more important role.

A comment to the author by a food company executive illustrates this latter point: "Until four years ago a nutritionist in the food industry was like a house pet. There was no real emphasis on nutrition. Now there is much greater emphasis and the nutritionist has both advisory and veto power."

One of the key barriers to be overcome in this area is *inadequate nutrition knowledge*.

Before food manufacturers can successfully sell nutrition, they have to understand what they are selling. Nutrition education begins at home, and it is here that food technologists, dietitians, home economists and other nutritionists play a key role. Education and guidance is also needed at all levels in the corporation.

Top executives need specific knowledge in order to intelligently formulate a corporate nutrition policy statement. Marketing managers require it to make wise decisions on product design and promotion. Salespeople need it to do an effective job of selling from the nutritional perspective.

Food technologists have two important roles to play. First, they should provide nutritional profiles of existing and new products so that the company's executives can understand the nutrient package they are selling; and second, they have a prime task in designing products to maximize their nutritional value within the constraints of other product characteristics important to consumer acceptability.

Nutritional biochemists and food scientists can make an increasing contribution on the research side. Corporations should increase their R and D allocations to the nutritional area to pursue ideas which eventually will better meet the nutritional needs of consumers.

The market researcher, in turn, would be wise to employ the skills of home economists and dietitians in gathering more relevant data on consumer attitudes and desires toward nutrition and foods. Product promotion managers should make a greater effort to provide consumer nutrition education.

To achieve these goals will require the fusion of the skills of communication personnel and nutritionists - and probably the joint efforts of industry and government. Some joint nutrition education undertakings have been realized and the results reveal considerable synergy and potential benefits.

In short, if the nutritional needs of the populace are to be adequately met, it will take the combined commitment and resources of government and industry. And it will also require an increased involvement of nutrition professionals in both the public and private sectors. This larger role will only be effective if there is closer interaction and innovation (1) among the different disciplines within the nutrition profession, and (2) between nutrition and non-nutrition professionals.

Such flexibility presents a major challenge to all involved. It will require the removal of our professional isolation, the discarding of the protective shields of our disciplinary jargon, and a willingness to learn from each other.

We must first escape from the shackles of our particular discipline in order subsequently to achieve the maximum value of that discipline's contribution to not only the company but also society as well - the consumers.

Nutrition is not rigid; it has many dimensions, and involves many disciplines. To successfully incorporate better nutrition into the mainstream of our food system - so that it can help sell the products - the practitioners in our nutrition community must accept the challenge of an integrated and interdisciplinary approach. ▲

On the TV programme "You bet your life" Groucho Marx asked one of his contestants who endorsed and sold "natural foods" what they did for him and the endorser said, "they made him rich".

Quoted in Food Technology, 30(12) December 1976.

NEWSPAPER CLIPPINGS

FEWER ACRES OF SWEET POTATOES PLANTED

From The Advocate-News, Barbados, 9 November 1976

Local farmers planted less acres of sweet potatoes in 1976, but they will still be able to meet the demands of local consumers.

This was stated in a release from the Barbados Agricultural Society (BAS) which also said that the yam average was slightly lower in 1976, but it seems that the yam production is over triple local demand.

Growers indicate, the report continued, that the yields of the young crop of sweet potatoes will be good - around 7.5 tons per acre - and that some surplus may have to be dealt with through outside markets.

Production figures released by the BAS show that 449 acres of the spring crop of sweet potatoes were planted by surveyed farmers, 171 acres less than last year.

The fall crop acreage stands at 347 acres which is 153 acres less than last year, and the reason given for the cut-back was that farmers were trying to avoid a possible market glut since several tons of sweet potatoes were planted in May and June.

The estimated consumption of sweet potatoes by Barbadians is 10½ million pounds per year and so a yield of 6.6 tons per acre would be enough to meet this demand, the report also said.

Production estimates range from 12 million to about 14 million pounds, and the 1976 total yam acreage, as shown by the survey, is 1,417 acres, 152 acres less than 1975.

According to estimates provided in the Barbados Development Plan of 1973 - 1977, 5.3 million pounds of yam were eaten by Barbadian consumers in 1976. ▲

GUYANA NOW GROWS ALL ITS BASIC FOODS

From The Daily Gleaner, Jamaica, 11 January 1977

Guyana, which in 1971 set out to feed, clothe and house itself in the space of five years, is now self-sufficient in all basic foods - providing needed carbohydrates, proteins and minerals.

The Minister of Agriculture in affirming Guyana's ability to feed itself, recited a lengthy list of production figures showing how food output has risen, and declared:

> "We cannot be starved out. We cannot be subjugated by the new imperialism of food. We have achieved independence in food..."

He insisted that not only was there food self-sufficiency as a whole, but some particular areas of the country were self-sustaining and new projects were underway with assistance from the Caribbean Development Bank (CBD) and elsewhere to further boost agriculture.

The Minister pointed to a 29% increase in sugar production between 1964 and this year and a rice output of 183,000 tons during 1975 to back his contention.

He also drew attention to rapid increases in poultry production, from 1.8 million lbs. in 1964 to 20.1 million lbs. last year.

Pork production had risen from less than 1 million lbs. to 4.9 million lbs. while fish catch increased to 40 million lbs. from 15 million.

Shrimp catch had nearly doubled from 6 million lbs. to 11.5 million lbs. while production of root crops increased from a quarter million lbs. in 1964 to 1.2 million lbs. last year.

SUPPORT

He said that the country's production targets and other objectives cannot be attained "without the support of all our farmers. I believe we have the support of the large majority of our farmers." ▲

MAJOR DAIRY PROJECT NEARING COMPLETION IN THE COUNTY OF CORNWALL (JAMAICA)

From the Public Opinion, Jamaica, 14 January 1977

Milk and milk products are among those foods regarded as being essential to healthy living. No country should, therefore, remain in a situation where it is too dependent on outside sources for this basic food requirement, especially when indigenous resources for the adequate production of their requirements exist locally.

Repeated efforts over the past 20 years to develop a local dairy industry, capable of making Jamaica self-sufficient in these products have failed. In 1972, the equivalent of 144 million quarts of milk in the form of milk powder were imported while approximately 28 million quarts of fresh milk produced locally, were left uncollected.

As the 30,000 square foot modern dairy at Montpelier in St. James nears completion, all machinery and equipment have arrived in the Island and installation will commence shortly. This exercise is expected to be completed towards the end of March 1977.

Sited in a area zoned for dairy development, the plant will initially process 25,000 quarts of fresh milk per one-shift-day, or 50,000 quarts in two shifts. The plant is however, designed to handle as much as 150,000 quarts of milk per day.

The dairy will need dependable supplies of fresh milk which will come from farmers in that section of the Island. At Shettlewood in nearby Hanover, a dairy co-operative has been established on some 1,000 acres of land. This project, which will have about 1,000 dairy cows, is nearing completion and with installation of equipment now in progress, should be completed in time for the opening of the Cornwall Dairy.

Plans are also well advanced for the establishment of a second milk production unit at Mafuta in St. James. Another milk production unit, Haughton Grove Farms, will be set up at Ramble in Hanover, and it is expected that the entire Montpelier complex of over 12,000 acres will be put into milk production.

An integral part of the project are two small milk collecting centres. These centres should help to stimulate milk production among small farmers in the area.

Special provisions have been made for the widest participation of the smaller dairy farmers. ▲

BETTER PROTECTION FOR BARBADOS CONSUMERS

From The Jamaica Daily News, 3 December 1976

The Barbados Government is considering legislation aimed at making certain standards mandatory for the protection of Barbadian consumers.

The Barbados Minister of Agriculture, Food and Consumer Affairs stressed the need for such legislation to get standards implemented once they were formulated.

In a speech to members of the Barbados National Standards Institution, he said the proposed legislation was also aimed at mandatory standards in training - for certification marking, and preshipment inspection.

"It will be the aim of BNSI to make the label 'Made in Barbados' recognized and universally acceptable", the Barbadian Consumer Affairs Minister said at the Standards Institution's Fourth Annual General Meeting in December 1976.

He then warned local manufacturers that "sub-standard products, labelling and services would not be tolerated any longer in Barbados". ▲

TRINIDAD MEAT PRODUCTION CONTINUES UPWARD TREND

From The Jamaica Daily News, 5 January 1977

Meat production continues its upward trend in Trinidad and Tobago, with the greatest percentage increase being shown in pork, the Government Central Statistical Office (CSO) has said.

During the third quarter of 1976, pork production at official abattoirs reached a 1,300,000 pounds, an increase of 6% over the second quarter.

The CSO said in its quarterly agricultural report for July-September 1976, that the performance in agriculture was generally good during that period.

The average retail price of pork increased from $2.55 per pound, giving consumers a more favourable pork market in terms of greater availability at a marginally higher price.

For the same period, production of broiler meat was 17.2 million pounds - an increase of 37% over the second quarter.

Cocoa production, according to the Report, was plagued by bad weather and disease problems affecting deliveries of beans to exporters to the amount of 485,000 pounds, as compared to 994,000 pounds in the corresponding last period.

This brought production for the year 1976 so far to 4.2 million pounds showing a decrease of some 60% production for the same period in 1975.

The Report noted that the significant decrease in production was due to three factors:

(1) A heavy flower drop during the initial flowering stage (October to December) caused by heavy rains in the latter half of 1975.

(2) Increasing incidence of black pod disease, and

(3) The emergence of "leafing" or heavy sprouting of new leaves, causing an unusual transfer of plant nutrients from the fruits to the leaves, resulting in the wilting of young pods.

The Report also points out that traditional crops of sugar, coffee and citrus earned some TT$32 million during the period, bringing the total earnings of the three commodities to $131 million so far.

The total production of sugar for 1976 amounted to 200,400 tons and exceeded production of the last three crops.

According to the Report the industry was enjoying relatively calm social conditions which did not prevail in previous years.

For the third quarter of last year, sugar production amounted to 6,500 tons representing a decrease of 72.4% over production of 23,600 tons during the corresponding period in 1975.

In another area table egg production was estimated at 952,000 dozens showing an increase of 35% over production in the third quarter of 1975. ▲

NEWS BRIEFS

CFNI TEMPORARY ADVISOR ON BELIZE ASSIGNMENT

Dr. Omawale, who served as Consultant to the second CFNI Workshop on Food Economics and Food and Nutrition Planning held in Barbados in November 1976, has been undertaking a research assignment in Belize as a PAHO Temporary Advisor attached to CFNI. The assignment has involved the collection of data relating to food and nutrition problems in the Country, and advisory services in respect of the formulation of a food and nutrition policy for Belize. This has constituted a body of background material which was used in connection with a Food and Nutrition Planning Seminar held in Belize from 14-18 March, in the organization of which Dr. Omawale was also associated, in addition to the preparation of a policy document for food and nutrition planning in that Country. ▲

RESEARCH ON NATIONAL NUTRITION COUNCILS TO BE CONDUCTED

Mr. Michael Lim Choy, of the Department of Agricultural Economics and Farm Management at the University of the West Indies, St. Augustine, was recently on a two-month attachment to CFNI as a PAHO Temporary Advisor. During his tenure, Mr. Lim Choy collected data on the history, structure, powers and functions of National Nutrition Councils in Barbados, Guyana, Jamaica, St. Lucia and Trinidad and Tobago, with a view to assessing their impact on the Food and Nutrition situation in the countries under review. The study was also designed to recommend ways in which the effectiveness of these Councils may be improved, resulting in the production of guidelines for their establishment in CFNI member countries. ▲

FIRST AWARD MADE THROUGH FORD FOUNDATION GRANT

Mr. Joseph Sydney Johnson, Chief Agricultural Economist and Head of the Macro Planning Section in the Agricultural Planning Unit of the Ministry of Agriculture, Jamaica, has been named by CFNI to be the recipient of a six-month PAHO/WHO Fellowship to Cornell University, U.S.A.

This is the first award of its kind made through a special Ford Foundation Grant in support of the work of the Caribbean Food and Nutrition Institute.

The purpose of such fellowships is to provide training in the methodology of assessment and planning of food supplies for senior officers in appropriate ministries of government in CARICOM countries.

At Cornell, Mr. Johnson has been pursuing a programme of study in the field of food and nutrition policy and planning in which he was already involved during the preparation of background material in respect of the development of a Food and Nutrition Policy for Jamaica. ▲

MASS MEDIA NUTRITION EDUCATION MOVES AHEAD IN GUYANA

Guyanese radio listeners can now tune in to nutrition information and consumer awareness broadcasts. The Guyana Consumers' Association has planned a series of radio broadcasts which are produced on Tuesdays and Thursdays from 7.25 a.m. to 7.30 a.m. on Radio Demerara and again at the peak listening hour of 6.00 p.m. during the popular "Panorama" slot. Housewives can tune in the next day to the same broadcast, which is repeated on the woman's programme at 1.00 p.m. In November 1976, the Nutrition Association initiated a series of 4-minute talks on food and nutrition topics which capture the airwaves at 8.15 p.m.,

immediately after the national newscast on Wednesday nights. "Cajanus" applauds these encouraging signs of progress in nutrition education via mass media and invites Guyanese listeners to share with other readers their reactions to these programmes. ▲

CRITICAL DIETARY ITEMS IDENTIFIED BY MINISTRY OF HEALTH (JAMAICA)

The Ministry of Health and Environmental Control (Jamaica) has now identified those items which form the basis of a cheap, nutritious diet, and which should at all times be stocked by all segments of the distributive trades - importers, manufacturers, distributors, wholesalers and retailers. This development stems from the conviction that one of Jamaica's major nutrition problems has been the lack of those food items which are vital to the proper nutrition of all sectors of the population. Non-perishable items include cornmeal, flour, rice, dried skim milk, condensed milk, D-grade sugar, margarine, vegetable oil, kidney beans, pigeon peas, broad beans and a variety of canned and salted meats and fish. Among the perishables are callaloo, pakchoi, pumpkin, carrot, liver, kidney, tripe and chicken. ▲

"The market, playing freely, will always feed the rich. You cannot expect the trade to arrive at a fair distribution of goods in the world. The trade is to make money."

- Dr. Ardeke Boerma,
Director General,
FAO, Rome.

BOOK REVIEW

THE TENDER GIFT: BREAST-FEEDING

Raphael, Dana. Schocken Books, New York. 1976. 200 p. illus. US$3.45.

Dr. Raphael's well-documented book carries the reader from the physiological explanation of how milk is produced, through sociological and emotional implications of breast-feeding to the decline in breast-feeding during the last decades.

Focussing on the traditional role of the "doula", a word taken from the Greek, the book shows how females in most mammal species assist the pregnant one during delivery and give their support to the newborn and the mother during the first stages after delivery. In most unsophisticated cultures, also, someone (the mother, a neighbour...) is usually prepared to perform this role during the trying and often unsuccessful *first* attempts towards breast-feeding. This is compared with the cold, unemotional way in which women in more developed countries tend to "go it alone" through hospital delivery and nursing. Yet, much as we admire Dr. Raphael's erudite work, we cannot but feel that her insistence on the "doula", as someone highly necessary to assist and support women during the first stages of breast-feeding makes the process almost impossible under the present conditions of urbanized life.

The book, however, deserves mention for its fascinating historical and anthropological references to breast-feeding, admirably reinforced by a series of fine illustrations from both natural history and works of art.

Her descriptions of breast-feeding practices in other cultures, and particularly her chapter on breast-feeding the adopted baby, have managed to set this book apart from the usual

range of literature on the subject and is recommended reading for all those who need more than merely practical information, and particularly, for both professional and lay persons who are involved in helping the breast-feeding mother.

Miguel Gueri
B. Andrea Okwesa ▲

"Early Indians believed that the longer a child received breast milk, the longer it would live. It was not uncommon, therefore, for children to be suckled until the ages of eight or nine years.

As recently as forty years ago, Chinese and Japanese mothers nursed their children as long as five and six years."

- "Saturday Review of the Sciences," May 1973.

FROM THE EDITOR

COMMUNITY HEALTH - DELIVERING THE SERVICES

The year 1977 is being commemorated as the 75th anniversary of the Pan American Health Organization and the logo chosen for this occasion, which we are reproducing on the back cover of all CFNI publications during 1977, graphically depicts the anniversary theme: "Community Participation in Health".

In recognition of PAHO's seventy-five years of distinguished achievement in the field of health, we publish this Special Issue of Cajanus which is almost entirely devoted to the subject of community health services, focusing on the issue of greater community involvement.

We in the CARICOM Region experience a particular set of circumstances - social, cultural, economic, and environmental - which we have seen can adversely influence the quality of life of all population groups, as well as the extent and level of health care which they receive.

There has traditionally been a lack of overall coordination in health service resulting in a variety of skilled workers performing different roles, but without the coordination necessary for a well-planned and executed programme. Since no one agency can provide all the services needed by the community, we need to place greater emphasis on the concept of health care as an integral part of family welfare and community development through the integration of services such as MCH services, communicable disease control, nutrition, environmental sanitation, and public education.

Our health workers need to be adequately prepared for their greatly expanded responsibilities, and our training schools made more responsive to community health needs so that they can better equip students to perform these roles. All responsible members of

the community must be involved in the monitoring and development of their health status and in making decisions which affect the quality of their lives.

We must search for innovative approaches which are appropriate to our particular circumstances, wherever the more traditional methodologies have been shown to be inadequate or inappropriate. The planning of systems whereby less emphasis is placed on hospital services and more on community outreach activities; the shift from an overemphasis on curative services to a more preventive approach; and the utilization of new categories of health personnel who perform roles traditionally relegated to the doctor, all reflect a commitment to a philosophy embracing the concept of wider community participation in health care delivery.

In planning an effective health care system we need to develop a set of measurable goals, objectives and techniques reflecting the philosophy of greater community involvement, to perceive the health and nutrition problems of the entire community in their proper context and not as fragmented entities, and to deliver the services where they are most needed.

THE EDITOR ▲

CAJANAQUOTE

"...the world's capacity to provide for humankind is not a matter of physical resources. It is a matter of human will, human ingenuity, human determination, and human organization".

- Nelson A. Rockefeller

FROM OUR READERS

THE EDITOR, CAJANUS

Dear Sir/Madam:

For the month of January, I did a special project on nutrition in St. Lucia. While there I was given an opportunity to read a few issues of *Cajanus*.

I was greatly impressed with the readings and would now like to become a subscriber. Could you be kind enough to add my name to your mailing list?

Many thanks in anticipation.

Paula Nurse
Cambridge, U.S.A.

Editor's Note: We have put Miss Nurse on the mailing list for Cajanus.

I have had the privilege to be on the mailing list of *Cajanus* since 1969.

Your newsletter is filed for the use of both our staff and graduate students in our Documentation Room. It is a very valuable reference in the course offered to candidates to a Master's degree in applied nutrition: Nut 6636 - Contemporary problems in Nutrition.

Congratulations for your very interesting newsletter.

Dr. Rachel Beaudoin
Montreal, Canada

I enjoyed the article published in Vol. 9, No. 3, 1976 entitled "Cajanus Cajan - The Nutritious, Historic, Versatile Pigeon Pea". My wife and I have been experimenting with pigeon peas for the last three years in an attempt to replace slash and burn; shifting agriculture with a rotation of crops that 1) enriches the soil, 2) yields a high protein food, 3) controls the grass, 4) can be interplanted with a primary grain crop such as corn or sesame, 5) can be instituted using traditional agricultural implements, i.e. machete. The enclosed flyer, which I wrote for distribution to local farmers, will give you a brief idea of the problems people face in this district and how we are attempting to use the pigeon pea to solve them.

In your "From the Editor" you mentioned you had published in Volumes 1, 3 and 4 other articles about the pigeon pea and I would greatly appreciate it if you could send me these articles and the bill.

I congratulate you on a fine magazine and thank you for whatever help you can extend.

Peter Dutton
Toledo District, Belize

P.S. Are any countries in the Caribbean importing pigeon peas? How much are they paying?

Editor's Note: Mr. Dutton was sent copies of articles on the pigeon pea which had appeared in Cajanus, and was referred to Dr. John L. Hammerton of the Caribbean Research and Development Institute (CARDI) in Belize for further information on the importation of pigeon peas in the Caribbean.

In the very interesting and for me, informative article by Hutton G. Archer in Vol. 9, Nos. 5 and 6 of *Cajanus*, entitled "Food and Nutrition Content and Approaches in CARICOM Media" there is however a statement on pages 276 and 277 that I must question: 'lemon is good for diptheria, rheumatism and fever; it is also very effective against typhoid and cholera'.

If this statement is false, why was it published in *Cajanus?* I realise that "opinions expressed by the contributing authors should not necessarily be construed as representing the views of the Caribbean Food and Nutrition Institute" and that this information is reaching your readers thirdhand, but such a statement appears to me, to so blantantly disregard all basic nutritional and medical knowledge available today that I am really surprised at seeing it in print in *Cajanus*.

If however, I am wrong and the statement is true, please send me the references supporting these views, or put me in contact with anyone who has experience in this matter.

David Bratt
Baltimore, U.S.A.

Editor's Note: We agree with Dr. Bratt that the statement was misleading and that we should have either omitted it or made an editorial comment. We are grateful to him for calling our attention to the error. ▲

Guyana has been listed among 60 Third World countries that have become self-sufficient in grain.

- Guyana Chronicle
22 January 1977

TOPICS AND COMMENTS

THE CORNWALL HEALTH PROGRAMME IN JAMAICA*

The people of the County of Cornwall, (comprising the Parishes of St. James, Hanover, Westmoreland, St. Elizabeth and Trelawny) in Jamaica will benefit from a comprehensive health-care programme which is now being introduced.

The programme will carry basic health service to the people through the building and equipping of a network of health centres close to where the people live, and the employment and training of adequate staff working in the field.

Emphasis will be placed on Maternal and Child Health, Family Planning and Nutrition.

AIMS

The programme is aimed at almost doubling the potential for primary health care in the country.

Its targets include:

- Reducing deaths of women in childbirth by half.
- Reducing sickness and complications in pregnancy by half.
- Reducing anemia in pregnant women by 90%.
- Reducing the rate of population growth by about a quarter.
- Reducing the death rate of new-born babies by a quarter to a half.
- Reducing the death rate of infants by about 20-60%.
- Reducing the incidence of severe malnutrition among young children by at least 50%.

**From a news release of the Ministry of Health and Environmental Control, Jamaica.*

HEALTH CENTRES

Fifty-seven new health centres will be built in the county, taking the total to 128, and 28 existing centres will be remodelled.

There will be four grades of centres, staffed and equipped accordingly. The smaller and simpler centres will refer more complex cases up the ladder.

The administration of the county programme will be based at the Cornwall Regional Hospital.

STAFF

The programme will directly employ about 1,500 health workers, including midwives, public health nurses, nursing supervisors, doctors, nutritionists, nutrition assistants and community health aides. These and other health personnel supporting their activities will be trained in Maternal and Child Health, Family Planning and Nutrition.

COVERAGE

Through the building and remodelling of health centres and home visits of midwives and community health aides more pregnant women, nursing mothers and young children will be reached.

The programme is aimed at:

- Providing care for 90% of pregnant women.
- Putting an end to delivery of babies without trained personnel.
- Providing services after birth for 70% of recently delivered mothers.
- Persuading at least a third of women between 15 and 44 to use family planning.

- Providing preventive health service for 90% of children under 2 and 70% of children between 2 and 5.
- Immunising 80% of children under 2 against smallpox, polio, diptheria, tetanus and whooping cough.
- Monitoring nutrition at status among mothers and young children and providing supplementary foods for 90% of children under 2.

The care of mothers and children from birth onwards, is an important component of a primary health care system.

[Photo: D. Littlewood © PAHO]

NUTRITION EDUCATION

During the Cornwall programme, a related nutrition education programme will be carried out throughout Jamaica to promote breast-feeding and weaning of infants and nutrition for pregnant women and nursing mothers. The use of the Maternal and Child Health Clinics and Family Planning facilities will also be encouraged.

SUMMARY

The Cornwall programme is seen as the start of an effective primary health care system for Jamaica, in which the nation's resources are efficiently used to provide service for the broad masses of our people.

When it expires, in 1980, it will provide the base for a new health service throughout Jamaica, using the experience gained in this programme.

Primary care will be taken into the communities to forestall the need for secondary care and also relieve pressure on hospitals and other complex centres, so that they can concentrate on secondary care and thus give better service.

The programme will result in a healthier population and, with the other social programmes in the county, will better prepare the people to play their full part in the development of Jamaica.

Editor's Note: Some readers will notice that the targets set out above are very similar to those in the Maternal and Child Health Strategy for the Caribbean Community (PAHO Scientific Publication No. 325, 1976). ▲

COMMUNITY MEDICINE AT WORK*

By Margery Gunter

The Lincoln Health Centre is one of the most progressive health centres in rural Jamaica.

It is attractive because of its cleanliness, the interesting posters on the walls, the patients' book shelves with assorted magazines and pamphlets on health education, the potted plants and wild-flower arrangements, and the cheerfulness of the staff. All these go together to make this health centre a vital contribution to community medicine in the programme of the Ministry of Health and Environmental Control.

The clinic staff include the Medical Officer of Health in Manchester, a SRN in charge of the clinic and a Public Health Nurse. District midwives attend the clinic twice monthly, rendering care to patients during infant welfare and antenatal clinic days, and assisting with home visits with the medical students.

Community Health Aides attend the two regular clinic days as well as the antenatal clinic and the Medical Officer attends one day per week.

Since April 1976, medical students from the University Hospital of the West Indies doing their final year in medicine are sent to the health centre five days weekly to do a course in community medicine. This experience has proven a blessing both for the students and the patients in the surrounding districts who attend the health centre.

The students interview and examine the patients in the health centre under the supervision of a lecturer attached to the U.W.I. The attendance of patients at the centre has increased enormously and patients far beyond its boundaries are now attending.

---

*From the Sunday Gleaner, Jamaica, 6 March 1977.

In addition to working in the Lincoln Centre the students visit the sick in their homes and if these patients need hospitalisation the students make all necessary arrangements to have them transferred to the Mandeville General Hospital.

They also visit schools in the area and carry out various projects - health education, immunization, disinfestation of lice, care of the teeth and the treatment of common diseases among children and adults in the community.

These projects are often explained to the children and adults through educational films, aided by lectures by the Health Educator for the area or the medical students.

A patron of the health centre always assists the medical students by taking them out on home visits. He also assists with the projection of films at the church where electricity is available. He often invites them as a group for an afternoon at his home with his family.

As part of the students' assignment they visit Project Land Lease farms and meat inspection depots in the community, under the supervision of the Public Health Inspector.

Students' presentations at which they demonstrate what they have learned and done for five weeks at the centre are attended by members from the Health Department: the Medical Officer (Health), Public Health Nurse Supervisor, Senior Public Health Nurse, Public Health Inspectors and District Midwives. Key members from the community, the patients, medical educators from University Hospital and the clinic staff also attend. ▲

BELIZE FOOD AND NUTRITION POLICY SEMINAR*

> *"No solution (to the nutrition problem) is discernable without the political will to find out why, who, how much and where people are suffering from hunger and unless plans are made accordingly."*

In March attention was focused on a Seminar organized by the Government of Belize, through the Ministry of Health and with the assistance of the Caribbean Food and Nutrition Institute.

Its objectives were to set a framework for the formulation of a Food and Nutrition Policy for Belize, which would define measures to ensure the nutritional well-being of all segments of the Belizean population. Prior to this Seminar, much research, collection, analysis and interpretation of data on the food situation of the country took place. It was determined that Belize has considerable potential for a high degree of self-sufficiency in food, but that there were several programme areas in which some action was necessary even before a Food and Nutrition Policy was adopted.

At the opening of the Seminar, the Ambassador for Belize to the Caribbean Community said that it was vital to Belizeanize our consumption patterns and that this transformation should be directed towards emphasizing the importance of fully utilizing the produce of our soil. He declared that the potential for developing along those lines was enormous and that it was the part of the Government's economic policy to fully exploit those potentials. He emphasized particularly, that the total involvement of the Belizean people remained the key to achieving those objectives.

**Adapted from The New Belize, May 1977.*

The Ambassador continued, "the revolutionary shifts from being consumers of what we produce is in itself a creditable goal. It will at the same time, however, advance the march to economic self-sufficiency. But herein lies the key to my proposition, for out of the energy of the Belizean farmers and the bounty of the Belizean soil the barnacles of malnutrition can be eradicated from our homeland".

A number of problems facing our national attitudes towards food and nutrition were grappled with, ranging from arguments in favour of "breast is best" for infants to accounts of some of the pathetic cases of malnutrition occurring among children who are neglected by parents.

The Seminar addressed itself to the setting up of objectives and targets over short and long-term periods in two specific and related areas - malnutrition and agriculture. It also considered a number of proposed health projects for implementation including the development and distribution of infant-weaning foods, the establishment of school feeding and industrial workers feeding programmes, improved sanitation, food fortification programmes and nutrition education, the latter being especially important. Education projects were also examined with consideration given to reviewing the curriculum to include the integration of nutrition and agriculture in primary schools and teacher training. This aspect, it was noted, had already begun.

Out of the interchange of ideas emerged proposals and recommendations, some of which will ultimately be embodied in the Government's Food and Nutrition Policy. ▲

LOOKING AT CARIBBEAN YOUTH: A HEALTH PERSPECTIVE*

by

A.C.K. Antrobus

Youth may be considered as a social community of those individuals in between late childhood and early adulthood whom the community as a whole identifies as its "young people". At the meeting of a PAHO Working Group on "The Health Needs of Young People in Latin America and the Caribbean" held in December 1975, it was decided to define youth as:

> "...*a segment of the population within the continuum of the life cycle;...it represents a separate phase or category expressing a dynamic change within the process of bio-psycho-social maturing*".[1]

In this definition the limits of the period of youth have been set at 15 and 24 years of age. It is this "dynamic change" in the biological, psychological and social growth of the individual that distinguishes youth from the other age groups. Therein also lies the basis on which health problems peculiar to that age group often develop. Hence it must be in the understanding of this process that we must seek to evolve a strategy whereby we can help the youth withstand the many threats to their physical, mental and

---

*Based on a paper prepared for a Meeting of the Technical and Scientific Committee of the Conference of Ministers Responsible for Health, Belize, 18 April 1977, and presented at the 3rd Conference of Ministers Responsible for Health, St. Kitts, 28-30 June 1977. Dr. Antrobus, formerly Acting Director of the Caribbean Food and Nutrition Institute is now PAHO/WHO Family Health Adviser for the Caribbean Area.

[1]Report of PAHO Working Group on "The Health Needs of Young People In Latin America and the Caribbean", Washington, D.C., 9-12 December 1975.

social well-being encountered in this exciting, but, in some aspects, hazardous period of life.

The population of the English-speaking Caribbean is of the order of five million. Based on an estimate of 16-20% of the total population, the youth of the Caribbean would number about one million, which makes them a numerically significant group among us. Closer examination of the demographic data shows that about 60% of the population are under 25 years of age, emphasizing that the Caribbean, like Latin America, has a predominantly young population.

The Caribbean youth, like youth elsewhere, have a number of serious health problems common to their age group - the most threatening being those related to pregnancy and child-bearing, sexually transmitted diseases, accidents, drug abuse and behavioural disorders.

Present data on these conditions are very inadequate, but their causation is multifaceted and appears to be rooted in socio-cultural and economic conditions which have undergone some dramatic changes in recent times thereby disturbing the stability of the society, and youth has been particularly vulnerable to these changes.

FACTORS WHICH INFLUENCE HEALTH PROBLEMS OF YOUTH

Even though they share several common problems, youth are a heterogeneous group and the nature and extent of these problems vary according to the combination of background factors that can influence the target individual. It would therefore seem advantageous to consider youth within a functional classification based on:

(1) Sex

(2) Age group: 15-19, 20-24

(3) Residence: Urban/Rural

(4) Income level of family

(5) Education: Level, Content

(6) Employment

(7) Social attitudes

There are some factors, e.g. sex distribution and age groups, for which data are available. In other cases the available information is either markedly limited, or virtually non-existent. Even in the absence of data, however, it is possible, as we examine the above categories to recognize some of the preconditioning factors that make for the vulnerability of youth to the problems peculiar to their age:

1. Sex

There are slightly more females than males in all age groups of the population. Among the youth, it is the women alone who are subject to the problem of teenage pregnancy. It is they, too, who avail themselves of fewer opportunities for skill training and higher education, and suffer unemployment rates 2 to 3 times higher then men.

On the other hand, it is the men who have the higher drop-out rate from school and swell the ranks of rural/urban migrants. It may also be surmised that their involvement in drug abuse, accidents and sexually transmitted disease is higher than the women's.

2. Age Group

The 15-19 sub-group includes the teenage schoolchildren among whom pregnancy and delinquency are a special cause for concern. These and the other problems of youth are generally more acute and severe at this stage because of the lesser bio-psycho-social maturity than in the 20-24 sub-group. It should also be noted that events with health implications, occurring during the earlier period may have a significant impact on the individual's health status in later years.

3. *Residence*

The high level of involvement of youth in rural/urban migration has aggravated the already urgent problems due to urban concentration. The syndrome of poor housing and environmental conditions, unemployment, fragmented family life, and social malaise ensure the persistence of such problems as delinquency and prostitution, venereal disease and abortion, drug use and behavioural disorders. Life for youth in these circumstances is fraught with imbalances and maladjustments, and may inevitably lead to frustration and the breakdown of socio-cultural value systems. It should be borne in mind, however, that rural life is not necessarily exempt from this range of problems for the youth.

4. *Income Level*

The income level of the family goes a long way towards determining the type of health problem that is most likely to afflict the youth. It has far-reaching influences on the level of education and nutrition, type of employment and orientation of social attitudes. Lower socio-economic status is generally associated with larger families and a shorter interval between childhood and full adult responsibility, and there is also the greater likelihood of early school drop-out. This, in turn, means a lower ceiling on the level of education attainable, and, consequently a lower level of job opportunities and careers. Thus, the youth in this category generally enter the labour force at the early age of 15-18, or join the ranks of the unemployed. In the higher income group in which there is generally greater assurance of education, employment and effective participation in the social and political life of the country, the youth may be subject to a greater degree of stress resulting from high parental expectations and those disruptions of family life characteristic of this socio-economic class.

5. *Education*

As important as educational level which is, for the most part, intrinsically bound up with socio-economic status, is the educational *content* of school curricula and its adequacy and relevance to the needs of the individual and the society.

More specifically, there is either an absent or inadequate curriculum in family life or health education for younger (5-15 years) as well as older schoolchildren in the Caribbean. Nor is there more than the scantiest provision for counselling services for adolescents either in school or out of school. These deficiencies must clearly exercise a dominant influence on the patterns of behaviour that later develop and result in poor, or at least immature, attitudes to health, sex and parenthood.

6. *Employment*

In many aspects, employment is the most critical of these issues since the level of unemployment is an indicator of the economic state of a country which, in turn, has a bearing on the quality and scope of services to the people, as well as on their standard of living.

In the context of a classification of youth, types of employment, age at first employment and the extent of unemployment are all significant. Unemployment is, however, the most telling of these indices. It is highest in the age group under consideration, and the higher level for women is a factor which must be properly and fully assessed when the health problems of young women (and teenage pregnancy, in particular), are being considered.

One cannot look at unemployment without taking into account the role of recreation. The combination of such factors as school drop-outs, bad living conditions, poor quality family life and unemployment is potentially explosive. The igniting fuse is ever ready in the form of deficient or absent recreational facilities,

the provision of which can remould the fuse into a safety valve. The demoralising and dangerous effects of idleness, frustration and lack of purpose at this stage in life are too well known to elaborate on them any further.

7. *Social Attitude*

There has not been much work at the national or regional level on the social values and attitudes of youth. There can be no doubt, however, that they play an important part in determining the health profile of Caribbean youth.

Youth have been very much at the centre of the revolutionary changes wrought on modern society. Liberalization of moral attitudes towards sex, dress and public behaviour has had great impact on the youth of the Caribbean. Likewise, the significant increase in air travel between the metropolitan countries and the Caribbean, coupled with the indelible imprint of tourism on Caribbean society during the last decade or so has contributed to the "future shock" which has smitten the youth and has, almost certainly, led to or accelerated the incidence of health problems like drug abuse, traffic accidents, venereal disease and illegal abortion.

Such maladies amongst the youth have a direct bearing on the overall health and productivity of the young, emerging nations of the Caribbean. More so, they carry in their wake the added dangers of child neglect, vagrancy, and family disintegration.

An analysis of data on youth based on the seven categories listed above should enable us to draw a reasonably accurate profile of youth - the origins, nature and magnitude of their health problems, and point to the directions we need to follow in developing appropriate strategies for active intervention on their behalf.

HEALTH PROBLEMS OF YOUTH

Let us now consider what are the specific health problems of youth. If one uses the traditional criteria by which health status is assessed, the youth are far and away the healthiest sector of the community: death rates are at their lowest, with the decline starting in the 10-15 age group and continuing right up to the 25-29 age group.

If we take Jamaica, the most populous of the English-speaking Caribbean countries, as an example, the leading causes of death in young people (15-24 years)[1] are:

	% of Deaths in Age Group
Accidents	20-25%
Diseases of Heart	10-13%
Complications of Pregnancy	7-8%
Malignant Tumours	5%
Respiratory Infections	4-7%

These represent only the known problems that end in death. There are other health problems of special significance in youth for which there is either a low or unknown mortality, and for which morbidity data are either not available or are not normally collected on an age-specific basis. These are:

Sexually-transmitted diseases
Drug dependence (abuse)
Under-nutrition, including anaemia
Over-nutrition
Dental Caries
Emotional and behavioural disorders
Pregnancy and its complications, including abortion
Traffic accidents

---

[1]*PAHO, Health Statistics Department, 1974 and 1975.*

There can be little doubt that "premature pregnancies" ranks highest among the current health problems of Caribbean youth and there is evidence that pregnancies and child-bearing are occurring at younger ages than in the past. Figures for St. Kitts-Nevis, Dominica, and St. Lucia show that approximately 30% of live births occur in girls in the age range of 10-19 years.

This leads to adverse consequences in terms of health and the demographic and social aspects of national development: both mother and child are usually at greater than normal risk of death or illness; birth rates are maintained at higher than optimal levels; and the social consequences are myriad - from school drop-out to child neglect and ruined lives.

There are also indications that abortions are on the increase judging by gynaecology bed-occupancy in hospital, medical records and school drop-outs.

Along with pregnancy and abortion, sexually transmitted diseases and traffic accidents may have both immediate and long-term injurious effects - problems that begin in adolescence may have their most serious, delayed effects much later in life, with the explosion of the time-bomb set in youth.

With regard to nutrition, national survey data from Guyana[1], St. Lucia[2], and Barbados[3] show that in the presence of the finding of a significant proportion of underweight in schoolchildren and adult males, one-third or more of women (particularly urban) over

---

[1]*The National Food and Nutrition Survey of Guyana. PAHO Scientific Publication No. 323 (1976).*

[2]*The National Food and Nutrition Survey of St. Lucia. CFNI Publication (1976).*

[3]*The National Food and Nutrition Survey of Barbados. PAHO Scientific Publication No. 237 (1972).*

15 years were overweight, i.e. more than 120% above standard weight-for-height ratio. It should be recognized, however, that continuing growth in adolescent mothers whose physical maturity is incomplete may add to the nutritional requirements imposed by pregnancy - a situation which may have adverse effects on the foetus[1]. Anaemia was found to be a problem in all age groups but had its highest incidence in pregnant women over 14 years of age.

The state of dental health proved to be another important and alarming finding. Approximately half the populations of these countries were found to be in need of dental care and the highest number of decayed teeth per person was found in the 16-20 age group.

In the relatively select population of University students served by the University Health Service in Jamaica, the group of neuroses, personality disorders and psychosomatic illness together ranked second only to acute respiratory infections as a cause for attendance at the Health Centre[2] in 1974-75. It is estimated that about 80% of the student body is under 24 years of age and hence come within our definition of youth. (At the time of writing there are no age specific data available for the other conditions listed.)

By their very nature, the health problems of youth cannot be effectively tackled within the confines of a health policy and programme. The PAHO Working Group on the Health Needs of Youth recommends that youth health services must be multi-disciplinary and multi-professional so as to take account of socio-cultural as

---

[1]*Angus Thompson: "Pregnancy in Adolescence" in* Nutrient Requirements in Adolescence, *ed., McKigney and Munro.*

[2]*Report of the Director of the University Health Services, (1975-76) University of the West Indies, Jamaica.*

well as biological needs. Besides, these services must be accessible and trustworthy, and continuity must be ensured. The accent should clearly be on preventive care, and counselling and advisory services should be a significant component.

An obvious and urgent need is for the establishment of systems of data gathering and analysis primarily to provide age-specific information on morbidity. But there is need to go further and initiate studies into the epidemiology of the health problems of youth in the Caribbean.

While this deeper understanding is vital for the devising of a definitive strategy, its realization will take some time. It is therefore mandatory that, in the face of such an overwhelming problem, we consider lines along which more immediate action can be taken.

RECOMMENDATIONS

Since we accept the concept that youth represents "a phase... within the continuum of the life cycle", and we recognize that influences may extend from one phase into another, any measures to the health of youth must begin at least in the preceding phase - the phase of the schoolchild.

Expert consideration has been given to the formulation of recommendations both by the Technical Group Meeting on a Maternal and Child Health Strategy for the Caribbean Community[1], and the PAHO Working Group on the Health Needs of Youth in Latin America and the Caribbean. Some specific aspects for emphasis are the recommendations regarding:

- Family Life Education with special emphasis on nutrition and family planning (60.3)[2].

---

[1]*Maternal and Child Health Study for the Caribbean Community. PAHO Scientific Publication NO. 325, 1976.*

[2]*Numbers in brackets refer to sections in the above publication.*

- Special programmes for pregnant school girls (60.4).
- Dental Health Services (52.4), (59.2).
- Special Youth programmes to counter unemployment (61).
- Guidance services for schoolchildren and parents (56).
- Investigation of health needs, and data collection (58.1), (61.3).

The whole body of recommendations in the Maternal and Child Health Strategy has already been approved by the Conference of Ministers Responsible for Health. Each country should now examine very closely the needs of its youth and the state of its resources with a view to identifying its most urgent problems and applying all the resources at its command. The pursuit of this must have as its goal the total well-being of its citizens throughout those early and vital phases that make up the continuum of the life cycle - infancy...early childhood...late childhood...adolescence... and youth. ▲

The assistance of PAHO Health Educators, Mrs. Kanta Khipple and Mr. Seymour Barnes in the preparation of this paper, is greatly acknowledged.

The rate of malnutrition in the parish of Hanover, Jamaica, has declined from 75% in 1973 to approximately 3%. Hanover carried the highest recorded rate of malnutrition in the island until 1973, when the Cornwall Health Programme was introduced.

- The Jamaica Daily News
13 June 1977

TOMORROW'S MEDICINE AND TOMORROW'S DOCTORS*

by

Halfdan Mahler

A thoughtful observer of medical schools will be troubled by the regularity with which the whole educational system of these schools is isolated from the health service system of the countries concerned. In many countries these schools and faculties are, indeed, the proverbial ivory towers which prepare their students for some high, obscure, ill-defined and allegedly international "academic standards" and for dimly perceived requirements of the twenty-first century, largely forgetting or even ignoring the pressing health needs of today's and tomorrow's society.

Most of the world's medical schools prepare doctors, not to care for the *health* of the people, but instead for medical practice that is blind to anything but *disease* and the technology for dealing with it; a technology involving astronomical and ever-increasing prices, directed towards fewer and fewer people who often are selected not so much by social class or wealth as by medical technology itself, and frequently focused on persons in the final stages of life. They prepare doctors to deal with rare cases which are hardly ever encountered, rather than with the common health problems of the community; for cure rather than for care. They tend to forget that technical solutions must respond to social goals, not dictate them. Medical practice has become almost synonymous with curative medicine and doctors are trained predominantly to look at episodes of diseases, paying little or no heed to the whole man, and to his interaction with society.

---

*This is an abridged version of an address which was delivered at the Centenary Celebration of the Faculty of Medicine, University of Geneva on 28 October 1976 by Halfdan Mahler, Director-General of the World Health Organization, Geneva, Switzerland.

Many medical schools prepare for medical practice in which the "best" health care is assumed to be that by which everything known to medicine is applied to every individual, by the highest trained medical scientist, in the most specialized institutions. But "quality" under this assumption can lead to a dangerous argument on the basis of which health interventions are constantly moved further up the professional ladder and medical education becomes insensitive to the health needs and problems of the community, being oriented instead towards expensive technology whose efficiency and effectiveness are conspicuously decreasing.

A SECOND LOOK AT WHAT WE HONOUR

We have to add to all this that, in many medical schools, education as such enjoys a rather low priority in spite of the lip service paid to it. All too often academic success is measured in such phrases as "You cannot deny him the post; he has published 103 more research studies than his nearest rival", or "You can't expect the greatest living authority on *coreopsis neonatorum* to be inspiring to the students after expending so much energy on patients and medical congresses". As Plato said more than two thousand years ago: "What is honoured in a country will be cultivated there". We may have to take a second look at what we honour.

It is evident even from this brief overview why a growing dissatisfaction is discernible with medicine in general and with medical education in particular. Sometimes even the cynical question is raised: does it really matter what kind of doctors we train? After all in spite of the drive for "quality" and "excellence", costs are rising so that even the wealthiest societies find them difficult to bear and global standards of health and well-being are declining; life expectancy, after reaching a peak, is now again decreasing; cancer rates are rising; cardiovascular diseases are rampant; drugs, alcohol, cigarettes

and traffic accidents nowadays kill more people than did all the epidemics together in earlier centuries; the aged are overwhelmed with diagnostic tools and abstruse technology, but their psychosocial and mental well-being is left largely unattended and uncared for.

This uneasy feeling about today's medicine is widespread. The medical empire and its closely related aggressive industry of diagnostic and therapeutic weapons sometimes appears more of a threat than a contribution to health. The general picture is that of a cost-explosive medical establishment catering not for the promotion of health but for the unlimited application of disease technology to a certain ungenerous proportion of potential beneficiaries and, perhaps, not doing that too well either. As a consequence of the present high technological pitch of diagnostics and therapeutics, the very attempt to diagnose and treat one ill may produce another, be it through side effects or iatrogenesis. As many as 20% of hospital admissions are reported to fall into this category in certain parts of the affluent world.

Nevertheless, it is my profound conviction that medical men do have a decisive role to play in humanity's war for *health*, which according to the World Health Organization implies the highest possible level of physical, mental and social well-being and not merely the absence of disease or infirmity. We can win this war only if all health workers - doctors, nurses and all others alike - are warriors, fighting together wholeheartedly, prepared to meet the challenge of the real health needs and demands of the community, and determined to join with others, sometimes leading with justifiable pride and sometimes suggesting with proper humility, to overcome those many problems that profoundly affect health but which are the proper concern of many professions in addition to ours.

Society, which, after all, foots the bill for all that happens in health, expects us to prepare doctors to fulfil a social purpose in response to the health needs and demands of the community which they are going to serve.

A LEVEL FOR SOCIAL DEVELOPMENT

The medical school is an integral part of society, an instrument which should prepare for work *in* and *for* society. I believe that public health activities can generate social awareness and can act as a lever for social development. I also believe that the protagonists of community health will be convincing in promoting social development and in protecting the interests of health promotion - and I stress the promotion of health and not the promotion of health services - only if they are imbued with the social purposes of community health.

To this end we must first examine carefully the conditions that graduates will face when they leave medical school, and arrange an educational programme which prepares them for that role. To do this, we have to ask a few searching questions:

- Do the graduates think and behave in terms of "health" rather than of "disease"? That is to say, do they apply techniques of prevention and health promotion and not only those of cure and rehabilitation?
- Do the graduates think and behave in terms of family and community, rather than in terms of the individual sick patient?
- Do the graduates think and behave in terms of membership of a health team consisting of doctors, nurses and other health workers as well as social scientists and others?

- Do the graduates think and behave in terms of making the best and most effective use of the financial and material resources available?
- Do the graduates think and behave in terms of their country's patterns of health and disease, and the relevant priorities?

If the answer to all these questions is in the affirmative, then the medical school is going some considerable way to preparing a graduate whose training is what I call "relevant" to the health needs of modern society. If however, some of the answers are not an unequivocal "yes", then there is urgent need to re-examine the whole philosophy and programme of the school concerned.

In an integrated health team each member performs those roles for which he or she has been trained - the doctor is only one component of such a team.

Doctors, however, and other health workers tend to adapt to the existing health system even when they are trained for quite different tasks. Therefore, the health system will have to be changed first and then the doctors be trained for the system. What kind of health system am I talking about? A system which is accessible to all members of the community, which is concerned with the promotion of the health of the whole community, and in which major decisions concerning health are taken and implemented by the community. A system in which the doctor is only *one* component of a team whose every member does what he or she has been trained for and which is oriented towards identifying and solving the priority health problems of the community. A system which realizes a social revolution in community health, which clearly recognizes that the enjoyment of the highest attainable standard of health is not only an individual human right but, over and above that, a community goal. In defining community goals, I believe four key sets of factors are involved: political, social, economic and technical; and it is the business of medical education to make the student aware of the role and importance of all four.

Medical education, the development of health manpower, is only one integral element of the development of health services. "Health manpower" has neither meaning nor purpose in isolation: it is solely an instrument for effecting health care. If not, we run the risk of providing a form of medical education which is a social deformation. It follows, therefore, that health manpower must be trained in terms of the health services within which it will operate; it follows, too, that the health services will develop according to the type of manpower available to them. No country can any longer afford the haphazard growth of health services, with its attendant waste of human and financial resources, that we have seen in the past. Those services must be carefully planned, and the success of the planning will depend in large measure on development manpower appropriately fitted to every stage in the

development of the health services. Obviously neither the pattern of the services nor the plans for their development can be the same for all countries. National or local health conditions and political and cultural systems will dictate the particular needs and demands that each health service must meet. Nevertheless, certain things are common to all.

For instance, there has to be some permanent mechanism for formulating manpower plans that broadly define the quality and quantity of doctors, nurses and other health workers to be trained, for ensuring that all those trained for their specific duties are optimally utilized, and for monitoring that utilization so that the further planning and training of manpower can be adjusted according to clearly defined needs. Thus the three main components of the health manpower development process - planning, training, and management - make up a composite whole, which should itself be integrated with the development of health services and which should bring together all the various governmental and non-governmental agencies, institutions, schools and other bodies with responsibilities in this field. The result of such a mechanism should be a health service that covers the entire population of a country and meets the promotive, preventive, curative and rehabilitative health needs and demands, and which is staffed in sufficient numbers by health personnel whose skills have been developed in answer to the health problems.

DECISION BY SOCIETY

This mechanism would be responsible for describing all the health problems of the country concerned and the alternative ways of dealing objectively with the priorities, and then for taking and carrying out the necessary decisions based upon this evidence. Thus, final decisions would be made by society rather than by the professionals concerned.

Given an integrated development of health services and health manpower, the activities of individual medical schools would be defined by health manpower plans based on the overall national health policies and plans, which, in turn, are an intimate part of the national overall policies and plans that each society must set for itself in the light of its social, economic and political aspirations and its own needs and resources.

Health manpower plans define not only the numbers and categories of health personnel to be trained, but also indicate the knowledge, skills, attitude, and area and level of competence needed to carry out the tasks of each. Here I would ask you to consider whether the time-honoured examination system still serves a really useful purpose. Should it not be replaced, in medical schools as well as in schools for other health personnel, by a system of evaluation that would give a valid measure of the ability of the learner to identify and solve the problems he encounters and to take good decisions, a measure of his competence and attitudes? A system, too, that would ensure both immediate feedback and long-term assessment; by that I mean one that would measure the performance of former trainees in relation to the health care required by the community.

Education in medical schools, I suggest, has to become *relevant* to present and foreseeable future community health needs rather than satisfying professional interests. Health personnel, whether physicians or others, trained to understand a problem, to exercise judgement, to take a decision and to continue learning throughout their lives will be able to serve society usefully both upon their graduation and 30-40 years later, that is, well into the twenty-first century.

For those who advocate the traditional science-oriented programme, as opposed to a problem-oriented one, let me cite here just one disturbing study: in an investigation in which the retained learning of "prerequisite" physics and chemistry was

tested at the beginning of a medical course in physiology, not only was it found that few students recalled enough to achieve again a passing grade in those subjects six to sixteen months after successfully completing the original course, but also that "good" students performed hardly better than "poor" students. Although this was not specifically reported, the reader was left with the inference that whatever the level of performance in those subjects, it had little influence upon later performance in physiology.

NO UNIVERSAL BLUEPRINT

It is quite clear that if we aim at the type of medical education I have tried to outline, there can be no universal blueprint for programmes. The hard task that confronts teachers and educational planners in each school is the definition of the *specific* competences their students must acquire to meet the local health needs and demands.

For this type of education it is necessary that the community as a whole be used for learning and that the hospital be considered as a place where a *certain stage* of the disease process can be studied. With hospital-based teaching, even if occasional and casual visits are paid to the "community", no health and community-oriented doctors with real *social* responsibility can be trained. Equally, if medical graduates are to be able to work in, or in certain cases be the head of, a team it is obvious that their training must be multi-professional so that they may acquire the necessary skills and attitudes to work with other members of the health team. In short, we need in every respect to adopt an open-door policy.

The teachers themselves will have to learn a new approach to education; they will have to learn how to help learners to achieve their objectives, how to promote efficient and effective learning. It is the learner, it is learning, that is central; *not* the teacher and the teaching.

All this means departures from present concepts and practices. I realize, of course, that schools as well as countries have their past and this has to be fully taken into account when planning for the future. Still, I feel quite confident, beyond all the question marks I have raised, that changes *are* necessary, that they will come, and that they will be for the better. The Constitution of the World Health Organization specifies many functions but only one objective - "the attainment by all peoples of the highest possible level of health". That, I think, is also the ultimate objective towards which all medical schools, as integral parts of the society in which they function, have to work. To achieve it, they will have to change the thinking of teachers and of the physicians already working as well as to contribute to changing the health care systems in the direction of greater social relevance, so that doctors are prepared to play their part in the health services of their country not merely to cure but to contribute to improving the quality of life of the people.

If we accept this orientation, we can easily answer the question stipulated by the title of this address: we will help our students to become socially conscious health professionals who are able and ready to cope with priority health problems of, and to care for, people "today" upon graduation as well as "tomorrow" in the future. I firmly hope that we share a common vision of what must be done. It remains to be seen whether we have the courage and the tenacity to take the action that will allow us to fulfil our objectives. ▲

THE CHANGING ROLE OF THE TRADITIONAL PHYSICIAN*

by

Manuel Bobenrieth

During the past 60 years, more medical knowledge has been produced, and more effective preventive and therapeutic programmes have been established, than during all the previous centuries of recorded human history. We have learned to alleviate suffering, eliminate serious diseases, prevent illness, and postpone many premature deaths.

Yet despite the rapid advances of the medical sciences during this period, the health of many people in developing countries has improved only marginally. Today, over one-third of the population in Latin America and the Caribbean lacks access to basic health services.

The situation is serious: Health care services are fragmented, their structure and operating procedures underdeveloped and underfinanced; hospitals must contend with obsolete physical plants, deteriorating equipment, insufficient budgets, low morale, and poor administration; doctors and nurses are scarce and concentrated in the cities. In general, the present health care system is not integrated with, nor responsive to, the community and its needs. A large share of the blame must go to the medical profession itself; it has been slow to perceive today's pressing needs and to respond to these needs in a critical and innovative spirit. Instead of adjusting to the new political, social, economic and technological realities, it has tended to conserve the traditional forms.

---

*Reproduced from Pan American Health, Vol. 8, No. 3, 1976.
Dr. Manuel Bobenrieth is on the Advisory Board of Pan American Health, Quarterly of the Pan American Health Organization.

Fortunately, however, changes are now taking place. With the encouragement of such international catalysts as the Pan American Health Organization and the World Health Organization, governments are rethinking their health delivery systems. The thrust of medicine today is a changeover from individual efforts to cooperative community ventures. The traditional way of practicing medicine, where one physician treats his individual patients, is becoming obsolete in many cases. Beyond a doubt, by the year 2000, within 25 years, the majority of the physician's present duties will be better carried out by automated technology and by other health professional and health administrators.

The physician, meanwhile, will take on a new role: as a leader in the new system of health care. He (or she) will be the chief executive of a team which will administer the delivery of health care to individuals, groups and communities. The team will be completely integrated. Its resources will be allocated realistically, and authority will be delegated. The physician will no longer be giving routine vaccinations or prescribing simple medicines. Only in cases of exceptional complexity will he engage in individual diagnosis and treatment.

As the team leader, the physician will become closely involved in planning, and in the training and use of human resources to satisfy the health requirements of communities. His education enables him to understand health in a broad sense and to act with an awareness of his role in the community. He must evaluate problems, establish priorities, design solutions, direct their implementation, and revise the programmes in light of results.

In this new role, the physician will have to re-learn the nature and purpose of medical practice. He will rediscover medicine as a social science, in which the role played by him as "doctor" is defined by society. Many of the decisions he takes regarding medical care will be dictated not by professional considerations alone, but by social ones as well. As a member of a

social institution in charge of health care, he will no longer treat mere *diseases*, but rather *people exposed to the risk of disease and death in their social and community environment.*

Physicians and other health care personnel must learn to work *with* patients, rather than how to do something *for* them.

The physician of the future must be a humanist. He must be involved with his community and its people. He must be a committed individual. His commitment to scientific ideas will prevent him from falling into an alienating routine practice. His commitment to change will ensure that he looks critically at traditional practices and patterns which stand in the way of progress. And finally, he must be committed to medicine as a human service; if he is not, he runs the risk of becoming a commercial exploiter of pain and human life, and a real threat to those who do teach and provide care.

The greatest need for this new team physician is at the primary level of health care, the point of access, initial contact, selection and referral to the rest of the health system. Until now, the second and third levels of health care - medium-sized hospitals and large, specialized teaching hospitals - have had first call on resources and medical personnel. The primary level has been the weak link in the chain, and is the most in need of more physicians and the health teams they would head.

The physician working on the primary level must provide health care on a continuing basis, which includes a wide range of basic services required for the preservation of health, and the treatment of common infections and emergencies. The primary level must be capable of handling two-thirds of the cases that usually require medical examination. If this could be accomplished, hospitalization would be significantly reduced, and medical costs lowered.

"The modern physician must provide continuous attention to the health of the family."

Like the traditional family practitioner, the physician of the future, working on the primary level, must focus on the basic social unit in the natural life of man: the family. But unlike his traditional counterpart, who generally provides medical attention sporadically in the event of a medical crisis, the modern physician must provide continuous attention to the health of the family. He must believe in and practice preventive medicine; promote the development of children; perform check-ups; assist in recovery after a serious illness; counsel his patients; teach them how to care for their own health; and lead his team and administer the physical resources available to him. He is a specialist, but in function, not in a certain age group, system of organs, or a disease.

If physicians and other health workers are to respond to the present realities, a whole new dimension should be added to their training. Health care and medical education have too long followed separate paths; they should be integrated. Work-study programmes, which bring the real world into the training process, have shown their value in recent years. Through more widespread use of this approach, health education and health services could be transformed and the traditional patterns would gradually be weakened. A physician who is trained in close contact with his community's realities would have his consciousness raised about his role in society.

The contradictions that presently characterize medical practice can be overcome. As physicians accept and learn the new roles that society demands of them, we can look forward to a new era in which the health professions will gain the flexibility to adapt to the needs of the people. ▲

MILK DEAL SIGNED

Guyana and Canada have concluded an agreement under which Canada will supply Guyana with 200 metric tons of skim milk powder worth G$351,000.

The milk will be used in a supplementary feeding programme in Guyana's maternal and child health programme. It is to be made available to approximately 25,000 children under the age of two years who attend Government clinics. The milk powder ration will be given in dry form for use in mixing a high calorie milk.

- The Advocate-News, Barbados

8 November 1976

NEWSPAPER CLIPPINGS

WORKSHOP ON PRIMARY HEALTH CARE DELIVERY HIGHLIGHTS ALTERNATIVE APPROACHES

From The Jamaica Daily News, 25 November 1976

People living in poor rural communities in the Caribbean who form the largest number of the Region's citizens are not enjoying a high standard of health, according to professionals in the field.

It was stated that the masses are not provided with adequate immunization, safe and accessible water supplies, and health and nutrition education.

Other primary health care needs lacking among the largest number of citizens of the Caribbean Community, particularly in the smaller islands, are the care of mothers during pregnancy and delivery, post natal and child care, sanitation and control of insects carrying diseases, like mosquitos and flies, the diagnosis and treatment of simple diseases, first aid, and emergency treatment.

These were expressed at a St. Lucia Workshop on Primary Health Care Delivery in November 1976 which focused mainly on alternative approaches to replace traditional strategies that put basic health services out of the poor peoples' reach.

The Workshop discussed approaches quite apart from the provision of the traditional health professionals like doctors. The intention now is to have the people of the Caribbean have a say in future health planning. This new approach could involve local communities in identifying priority health problems, in working out appropriate solutions and in selecting individuals for training.

Alternatives in use by Canada, Colombia, Cuba, Jamaica, Venezuela and Surinam were also considered. These alternatives have certain common features including the best possible use of

the skills of expensively trained doctors, nurses and midwives, and the giving of tasks to auxiliary personnel with comparatively little training. ▲

Representatives of a new category of auxiliary health worker in Jamaica - the Community Health Aide - learning how to prepare nutritious multimixes as part of their training programme.

PRIMARY HEALTH CARE PROGRAMME TO BE LAUNCHED IN CORNWALL COUNTY (JAMAICA)

From the Jamaica Daily News, 3 January 1977

The people of Cornwall (St. James, Trelawny, Hanover, Westmoreland and St. Elizabeth) Jamaica, will shortly begin to benefit from a comprehensive health care plan known as the Cornwall County Health Programme.

The main objective of the Cornwall County Programme is to provide an efficient primary health care system. This primary health care system seeks to relieve the doctor of having to deal with cases that can be easily dealt with by assistants.

Many hospitals are crowded with people who need simple health care or advice. As a result, the doctor's time is very often spent in giving advice and minor treatment.

The provision of increased numbers of Community Health Aides who will visit people and assist in operating health centres, as well as the provision of more health centres and para-medical services will help to solve this problem.

When the Project is fully in operation, there will be one Community Health Aide (CHA) to every 2000 persons. Family planning will be integrated into the health system, and family planning lectures will be given at each health centre. Another aspect of the Programme is its emphasis on nutrition. An island-wide nutritional survey is now being carried out to ascertain the exact health needs of the people and their attitudes toward nutrition. The nutrition programme is aimed at persuading mothers to breast-feed and eat the right food to ensure the full development of their children. ▲

GUYANA TO TRAIN OWN MEDICAL PERSONNEL

From the Sunday Gleaner, Jamaica, 6 March 1977

The shortage of medical personnel in Guyana has forced the country's Government to initiate the localized training of doctors and dentists. Such a scheme, it was explained, will ensure also that the locally trained doctors will become community service oriented.

The Minister of Health explained, during the Budget Debate, that discussions had been held with other Caribbean Community countries to work out a plan for regional training. He explained that during the past 20 years, 1000 doctors had been produced by the University of the West Indies; but only 300 had remained in the Region. This meant, he said, that the Caribbean Region, as a Jamaican Minister of Government had recently pointed out, was providing technical assistance to such countries as the United States, the United Kingdom and Canada to which places Caribbean doctors migrated.

The Minister agreed that the "brain drain" was a problem, but noted that a recent Commonwealth seminar had recommended that doctors should no longer be trained by developing countries to practise in metropolitan countries.

He also observed that, historically, Guyanese doctors were trained in capitalist countries and were therefore, oriented towards a 'fee-for-service' situation in which they wanted to have a big practice and to accumulate a large bank account. Both the Government and the Opposition denounced the practice adopted by doctors of charging fees for providing medical services which should be free.

Coming fron a background where their parents probably had to mortgage their house and pawn their jewellery to see them through medical school, some doctors found themselves unable to provide community service until after 25 years of practice. The answer was to train doctors in an environment which was oriented towards community service, hence Guyanese medical students were now being sent to such countries as Hungary, Cuba, Mexico and India. ▲

BARBADOS BANS SOME FOOD IMPORTS

From the Daily Gleaner, Jamaica, 24 January 1977

The Minister of Agriculture and Consumer Affairs in Barbados has said that a total embargo has been placed on the importation of several food items which can be grown locally.

Speaking at the close of an agricultural exhibition, he said the items would include carrots, beets, beans, sweet potatoes and similar diced or chopped vegetables in tins - small or institutional size.

He said he did not intend to grant licenses to import items he was certain can be grown in Barbados, and told farmers that in time they will not have to worry unduly about glut situations and great fluctuations in the price level.

"I must, at the same time, issue a warning, however, that quality and standard will play an important part of the exercise", he said. ▲

COURSE TO PRODUCE NEW TYPE DOCTOR

From the Daily Gleaner, Jamaica, 14 June 1977

Extensive discussions are now taking place on the new curriculum for Medical Education at the University of the West Indies which is expected to come into effect in 1978 - designed to produce a doctor oriented to community medicine.

Aspects of the proposed curriculum were discussed in April 1976 at a medical conference attended by regional medical, technical and scientific officers in Belize where the UWI Medical Faculty was commended for its efforts to make the medical teaching programme more relevant to the Caribbean.

The new course to be adopted by the University was discussed recently at a two-day workshop held in Jamaica and it will be on the agenda of the Caribbean Health Ministers Conference to be held in St. Kitts from June 28-30.

In its study and drafting of the proposed curriculum the Medical Faculty is being guided to a great extent by a paper prepared by the CARICOM Secretariat last year on Priority Health Issues in the Caribbean.

The following study programmes are proposed to be included in the new curriculum; basic medical science along with such disciplines as epidemiology, social and behavioural sciences, child health and development and community health for the first year, and for the second, third and fourth year, clinical studies on medicine, surgery, psychiatry, obstetrics and gynaecology, pathology and microbiology which will lead to the final M.B., B.S.

Among the major changes in medical training expected as a result of the new curriculum will be a four-year programme instead of five, leading to the final M.B., B.S. examinations, followed by a two-year instead of one-year pre-registration period, one of which will involve extensive and intensive community work. ▲

NEW ARTIFICIAL REEF ESTABLISHED

From the Daily Gleaner, Jamaica, 26 February 1977

The Fisheries Division of the Ministry of Agriculture (Jamaica) recently initiated the establishment of a new artificial reef in the waters near South Cay at the Port Royal Cays area south of Kingston. The reef is made of bundles of old car-tyres.

This is the fourth artificial reef to be established in Jamaican waters under a programme whereby the Fisheries Division is supplied with scrapped vehicle tyres for use in artificial reef construction. Vehicle tyres have been found to be the most suitable material under local conditions as they do not release any pollutants into the water and are virtually indestructible. Also, very importantly, they remove a potential pollution source from the environment, converting these tyres into devices which will contribute to a gradual increase in protein supply. This is effected through increased fish catches from the artificial reefs resulting from the attraction of reef fishes to the tyres.

Other small tyre reefs have been established at Jackson's Bay, Clarendon, near Pigeon Island in Old Harbour Bay and near Drunkenman's Cay at the Port Royal Cays. Further expansion of all these reefs, as well as the establishment of new reefs, is planned for the future.

The Jamaican Artificial Reefs Programme follows successful experiments in this field in recent years by several overseas governmental and private agencies. ▲

CATTLE HIDE CONSUMPTION: A THREAT TO TANNING INDUSTRY

From the Jamaica Daily News, 14 February 1977

Jamaicans eat about $1 million in potential foreign exchange each year when they consume 50% of the cattle hides produced in the island.

Sources quote that some 80,000 cattle hides are produced in Jamaica each year but the Tannery receives only 50%. A small portion of about 10% goes to sole leather tanneries and the remainder is eaten.

And because Jamaicans favour cow skin meals, the Tannery has to import this extra amount of hides from Canada and the United States.

But the cattle hides being eaten could be better used for making shoes because the Scientific Research Council has reported that although the hides have a protein content of 54% the net utilization of the gelatin is about 2.5%.

The Managing Director said if Jamaicans would stop eating the cattle hides the country would become self-sufficient. ▲

Editor's Note: We would ask: "Is tanning a threat to consumers who like to eat hides?" What do our readers think? Do Jamaicans eat half the cow skin available?

CAJANAQUOTE

"We must make grand plans because there are a whole heap of us. On the other hand there is one-one dinner".

- Ronnie Thwaites

Quoted on "Public Eye" (Jamaica Broadcasting Corporation, June 1977).

NEWS BRIEFS

TRAINEE COORDINATOR FOR GUYANA NUTRITION AUXILIARY COURSE AWARDED FELLOWSHIP

Miss Neva Jones, a former DCN graduate and a staff member of the Nutrition Department of the Guyana Ministry of Health recently pursued a five-week training course in Jamaica, which was designed to equip her with the skills necessary for coordinating the proposed training activities for nutrition auxiliary personnel in Guyana. The programme involved discussions with CFNI senior staff members on the education and training of auxiliary workers, the role of such persons in the implementation of nutrition programmes and major aspects of food and nutrition policy. Visits were made to local government agencies in the field of food and nutrition, where discussions centered mainly on the role and utilization of community nutrition graduates and community health aides in the Jamaica National Nutrition Programme, with particular reference to the implementation of the Programme in the County of Cornwall. ▲

BELIZE NATIONAL FOOD AND NUTRITION PLANNING SEMINAR

The Government of Belize, with the assistance of the Caribbean Food and Nutrition Institute convened a Seminar on Food and Nutrition Planning from March 14-18 in Belize City.

Whereas previous CFNI workshops on food and economics and food and nutrition policy and planning were regional training exercises involving personnel from other countries of the Region, this Seminar was essentially national in scope. It was an attempt to formulate an appropriate food and nutrition policy through group discussions among the 20-30 participants who were drawn from a wide cross-section of positions at the planning and policy-making level in various Ministries of the Belize Government.

Background data on the health and nutritional status of the country, food production, trade and marketing, and food availability and consumption patterns were collected by Government officials and two PAHO/WHO Consultants, who also assisted in the drafting of a policy document which, it is expected, will be submitted to the Belize Government by the end of July. ▲

PROPOSED ANAEMIA STUDIES IN JAMAICA

Nutritionists at CFNI, the Ministry of Health (Jamaica) and the Tropical Metabolism Research Unit (TMRU) are proposing to conduct a series of experiments to locate a suitable vehicle in the Jamaican diet which can be supplemented with iron and folic acid. It is felt that, although counter flour is fortified with iron, the iron is absorbed to a very low extent, so experiments are centering on changing the type of iron to one with a higher absorption rate.

Such a project, if successful, will have positive implications for the dietary treatment of iron-deficiency anaemia in Jamaica which is particularly prevalent among women of child-bearing age. ▲

FOOD AND NUTRITION SURVEILLANCE SYSTEM ESTABLISHED IN ST. KITTS-NEVIS

The Government of St. Kitts-Nevis, in conjunction with CFNI, has established a food and nutrition surveillance system in that country.

The project will be an attempt to centralize the collection of data on Nutrition, Agriculture and Socio-Economic indicators so that such data could be correlated to show trends in food availability and in the nutritional status of the population.

While wholly a Government project, it will involve senior staff members of CFNI whose contribution will be mainly technical and advisory. ▲

FOCUS ON CFNI STAFF...

At the end of June, CFNI - and *Cajanus* - said goodbye to Dr. Kenneth Antrobus who has been Acting Director since January 1976, following the departure of Dr. Robert Cook. In August 1976 he was appointed Area Family Health Advisor for PAHO/WHO, a position which should enable him to retain his links with nutrition and CFNI. Coming from a background in Paediatrics and Child Health, and with experience in the administrative and clinical aspects of Family Planning programmes, Dr. Antrobus joined the staff of CFNI in July 1971 as Medical Nutritionist. His chief responsibilities lay in the area of training and education: From 1971-1974 he was Project Director of the "Lambs River Project" in Hanover which entailed the training and utilization of local volunteers in community health and nutrition. From 1975 he has been Team Leader of the "Maurice Pate Travelling Seminars" which were held in support of the "Strategy and Plan of Action to Combat Gastroenteritis and Malnutrition in Children Under Two Years of Age" (SPACGEM) in several English-speaking Caribbean countries. Since 1975 also, Dr. Antrobus has been Editor of *Cajanus*.

Long-standing readers of *Cajanus* will fondly remember Dr. Michael Gurney, Medical Nutritionist at CFNI from 1969-75 and Editor of *Cajanus* from 1972-1975, who has been appointed Director of CFNI with effect from 1 May.

In *Cajanus* Dr. Gurney initiated the popular "Nutrition Made Simple" feature which many of our readers have expressed the desire to see reinstated on a regular basis, and which, who knows? may reappear.

Dr. Gurney was most recently based at the WHO Regional Office in Alexandria, Egypt, to which he was transferred, because of the war, from Beirut, Lebanon. In Beirut, he was Project Manager of the Regional Food and Nutrition Training Project. *Cajanus* extends a warm welcome to Dr. Gurney, his wife Jean and son Mark, and wishes him a successful term of office.

Mr. Kenneth Leslie, Agricultural Economist on the staff of CFNI was a participant in an International Study Symposium on "Policy Making and Planning to Reduce Malnutrition" which was conducted at the University of California, Berkeley, from 29 March - 1 April 1977.

The Symposium was an exercise in determining the usefulness of relevant data for policy and programme planning, and in refining the methodology for analyzing nutrition problems and programmes.

Mr. Leslie was also a delegate to a seminar in nutrition policy development sponsored by the Rockefeller Foundation, which was held in Guadeloupe, French West Indies from 29-31 May 1977.

There has been a new addition to the family of Mrs. Andrea Okwesa, Media Officer/Editor at CFNI, in the person of Chika, a son born 12 April 1977 - exclusively breast-fed, of course! ▲

UWI MEDICAL COURSE TO BE MORE COMMUNITY-ORIENTED

There are plans to structure the medical course at the UWI to better equip doctors for serving a wider cross-section of the community. This means incorporating knowledge of community attitudes, the background of patients, the sociological factors which affect their lives and so on, along with the straight medical knowledge.

This is the kind of approach which has been used with success in many other countries.

The rapid pace of change in all communities makes it necessary for the modern doctor to see his patient, not as an isolated medical statistic, but as part of the wider community. ▲

JAMAICAN "NANAS" TO RECEIVE MIDWIFERY TRAINING

The Jamaica Association of Midwives, in conjunction with the Ministry of Health and Environmental Control, is carrying out training programmes to equip more midwives. It was noted by the Project Director of the International Confederation of Midwives that many women were dying in pregnancy and losing babies because midwives have not been seeing them.

She believed that if the mortality rate was to go down, more midwives would have to be trained, so it was necessary that the traditional birth attendant in the villages be identified and trained to become a full member of the health team. This was the person, she said, who was best known to the community, who was respected and could speak the people's language. ▲

FROM THE EDITOR

AGRICULTURAL SELF-SUFFICIENCY - IS THIS ENOUGH?

CARICOM Day, celebrated on 4 July, drew attention to the need for greater self-sufficiency in regional agricultural production, and on the implications of this development for education, health and youth.

The Regional Food (and Nutrition) Plan, described on page 192 as the one plan which "must not fail", is crucial to the achievement of this goal, since its success is expected to reduce the Region's current one billion dollar per year food import bill. Areas earmarked for an increase in food supply are livestock, grains and legumes, fruits, vegetables and fish. A corn-soya project has already started, with 2,100 acres of land under production in Guyana and, as a news clipping on page 228 reports, the first harvest of corn is soon to be reaped. Soyabeans and black-eye peas are also slated for cultivation, making the total land area under production in these crops 10,000 acres annually. It is also envisaged that the Region's total requirements for these significant dietary items will be fully met, thereby eliminating the need for expensive foreign imports. Three major fisheries projects are now entering the feasibility stage and are expected to increase regional availability by more than 100 million pounds of fish yearly after seven years. And in the Lesser Developed Countries agricultural development is also gathering momentum, with the establishment of multi-purpose fruit and vegetable processing plants.

An increase in food supplies however, would not by itself solve the problem of malnutrition. Without a corresponding improvement in the socio-economic conditions which also contribute to the spread of this disease, the poorest and neediest members of society will always remain vulnerable. Malnutrition, particularly in childhood, continues to be one of the most severe health

problems of the Region. Early childhood malnutrition, aggravated by a chronic deficit, primarily in energy and secondly in protein throughout the growing years, makes it impossible for many of our young people to attain their full physical and intellectual potential. This clearly exercises an adverse effect upon health and educational attainment within the community and can seriously retard the development process.

Implicit in this Plan should be schemes designed to improve the health and nutritional status of Caribbean people, such as improvements in low-income housing, water supplies and environmental sanitation, more effective and widespread health care particularly for mothers and children and literacy learning, coupled with adequate health and nutrition education to all segments of the population, which should result in improvements in food attitudes and practices. Since these actions involve a number of different skills and disciplines they are the joint responsibility of several ministries of government and also form part of the important plans and programmes comprising a food and nutrition policy which is discussed in the paper beginning on page 195.

We applaud those countries in the Region which have clearly demonstrated, and enunciated, the political will to incorporate a nutrition component into their development planning, by having either implemented, or reached some stage in the development of their national food and nutrition policy.

THE EDITOR ▲

FROM OUR READERS

THE EDITOR, CAJANUS

Dear Sir/Madam:

Thank you very much indeed for the most recent copy of *Cajanus*. I must congratulate all concerned for a really excellent production, read with the very greatest of interest. It has a continuing reputation through many parts of the world.

Dr. Derrick B. Jelliffe
Head, Division of Population,
Family and International Health
University of California
Los Angeles, California

With interest I have read your article "The Challenge of Nutrition Education in the Caribbean" in *Cajanus* Vol. 10, No. 1. On page 30, you mention various possibilities as to audio-visual communication materials. I am not only interested in these aspects of nutrition education, but moreover, I have organized a few times a Workshop on Audio-visual Aids for an International Course in Food Science and Nutrition (in the Netherlands and Belgium). As I consider myself a combination of a chemist, a nutritionist (both professionally) and a magician (non-professionally), I have seriously thought of introducing *magic* as a visual aid in nutrition education. To my knowledge this doesn't exist anywhere in the world; my many years of experience in magic performances for various population groups have convinced me that magic at least might be added to the list of audio-visual aids in nutrition education.

I have tried this out a few times during said Workshop and also at some Dutch schools. The first results (attracting the attention and understanding of the nutrition message) were promising.

A general comment might be, "Well, this sounds interesting, but nutrition educators are no magicians". My answer simply is: many magic tricks can be performed in an easy way and are easy to learn; moreover, in many cases a nutrition message can be put into the performance (i.e. adapting the "story" to the required circumstances).

In addition, it should not be forgotten that also other audio-visual aids require some skill in order to use these aids to their best advantage.

Although I have not yet made an attempt to officially introduce magic in the way I mentioned, unofficially I have had some contacts with nutritionists from Asia, Africa and Latin America who told me that there are good possibilities for magic as an aid in nutrition education.

If you know nutritionists who are interested in applying magic to their education programmes, they might get in contact with me.

Thanking you for your comments, if any,

Dr. W. Van Dokkum
Central Institute for Nutrition and Food Research
Zeist, Netherlands

Editor's Note: Cajanus readers are urged to send us their impressions, and experiences, if any, on the use of magic in nutrition education.

Let me thank and congratulate you on the professional way your magazine is presented. The material is invaluable and I use most of the information a great deal in radio programmes. Sometimes the information on some topics and sometimes even on

some foods is quite technical so in order to use it I've had to call on all my interpretive skills, but often there are 'snippets' which I take out of the whole thing and use. On the whole, it is pretty straightforward and very easy to turn into 'talk' language. I do mention that the information is taken from *Cajanus*.

I wouldn't want to miss a copy of *Cajanus!*

Is it possible to include in one of your issues some simple food preparation hints for the most commonly used vegetables - for example, what combination of foods is necessary for a complete meal without using meat protein? As you know the meat protein is not always available, but if we can alert persons to the fact that rice with peas and a vegetable salad would work without the addition of some kind of meat - it could go a long way towards changing attitudes. Coming from *Cajanus* would give a great amount of credibility to the whole argument.

Rose Willock
Radio Antilles, Montserrat

Editor's Note: We have long felt that Cajanus should include recipes - but only if they give nutritional information. However, earlier issues of Cajanus do contain recipes, in particular Vol. I, No. 4, 1968, p. 100; Vol. III, 1970, p. 345; and Vol. IV, 1971, p. 185.

Miss Willock was sent copies of these recipes also of some other main dish meatless meals from other sources in the Caribbean.

Thank you for sending me issues of *Cajanus* during my stay here in England. I have always found the articles interesting and stimulating and a help in the work I have been doing.

At the end of this month I shall be returning to the West Indies and hope to take up a post in Guyana. I shall look forward to receiving copies of the publication there.

Before reaching Guyana, I hope to make a short stop in Jamaica, and if possible, I would like to come and visit the Caribbean Food and Nutrition Institute.

With every good wish and continued success with *Cajanus*.

Sister Barbara McLean
Ursuline Convent
Liverpool, England

Just a note to thank you for *Cajanus*, which I am now receiving with great benefit.

Hoping that it will continue to be a success in enlightening the Caribbean in matters of food and health.

Theophilus Kelly
Charlestown, Nevis

In the past you have been kind enough to send me, gratis, regular copies of your most interesting review *Cajanus* in my capacity as Editor of the FAO Food and Nutrition Review.

I am leaving the Organization at the end of this month and I would be keen in continuing to receive your newsletter as in the past, free of charge.

Dott. Mario de Crescenzo
Editor, Food and Nutrition
Food Policy and Nutrition Div.
Rome, Italy

Editor's Note: Dr. de Crescenzo is continuing to receive Cajanus, as requested. ▲

TOPICS AND COMMENTS

A RICE DEAL WORTH TRYING*

By Ric Mentus

Jamaica, at the moment a substantial importer of rice, can become self-sufficient in rice and, in time, start to export. Thousands of able-bodied men and women are unemployed at the moment; large amounts of arable land lie idle; in the financial years 1975-76 and 1976-77 the Government will have spent $103 million on the Impact Works Programme; and there is now the most urgent need to restrict imports and feed the nation from the Country's own resources.

What these conditions presuppose is that there is the manpower, the money, the desire and the land to make rice production at the level of satisfying the needs of all the people, a very urgent consideration. In fact, it must be viewed as a serious contradiction that this country has all the means present to make the project workable and yet continues to import rice without trying to use those means in a positive way.

To begin with, there are a number of swamp areas in the country which may be suitable for rice cultivation. And although some cannot be so used because such use would disturb the ecology and lead to a number of undesirable side-effects, there are others, such as Negril Spots, that can be used.

Apart from the very direct value of a rice industry to the food needs of the country, there is also the consideration that it is a labour-intensive enterprise, if even machines may in time take over much of the work from the people.

Land clearing and preparation will, of necessity, have to be done by machines because it will be too long, drawn out and costly to be done manually. But this does not mean that there will not

---

Adapted from The Jamaica Daily News, 6 March 1977

be considerable scope even at this stage for manual work in the final laying out and clearing of the rice beds.

Depending on the amount of land to be used as a start, and the number of earth clearing machines that can be thrown into the battle, this preparatory work should not take much more than three months.

In certain Caribbean countries, ecological conditions are favourable to the production of rice, but not wheat, which has to be imported.

Planting will have to be done in the rainy season because rice needs a lot of water in the early stages. This will also mean that in selecting and preparing the land, serious attention must be paid to the provision of drainage and irrigation so that the rice fields can get water when needed and the water can be systematically drawn off as the reaping time nears. Under normal circumstances, there should be two crops a year.

It may be a good thing at the start to put the project in the hands of a small group of technicians and experienced rice farmers so that those who will be going into it for the first time will have proper guidance in all the phases of the operation. At the beginning too, it can perhaps be run more on the lines of a State farm than a private estate. But as the workers become skilled at their tasks, it should be converted into a co-operative which will be responsible for cultivation and selling of the paddy to the existing mill.

A careful check must also be kept on the amount of money spent on the project, because the venture must be seen as a viable economic one. And although it is not expected that profits will be realised immediately, this must be the main objective.

At some point along the way - those who run the scheme will have to decide when - the co-operative must acquire the mill and subsequently the packaging facilities so that the industry will eventually control the price which the consumer pays for the product, cutting out all the stages of middlemen and their mark-ups.

At this point, it should be possible to look at the viable by-products that can be spun off from the principal commodity - by-products like rice bran oil, rice wine, rice crispies, etc. It may also be the time to look at some system whereby fertilizer to increase yields can be acquired at costs that will be low enough to increase productivity in the whole industry.

If such a venture is undertaken, care must be taken not to overload the work force with people. It must be run as a serious commercial venture, and in this way it will continue to create profits, if even these are scaled down to give the consumer rice at the cheapest possible price. ▲

THOSE 'NOXIOUS WEEDS' ARE GOOD FOOD VALUE*

The leaves, stems, and roots of dozens of Caribbean wild plants are not only edible, but palatable and nutritious, according to the Institute of Jamaica Botanist, George Proctor.

In a lecture on "Wild Plants for Survival", Dr. Proctor said that some of these plant species could even be cultivated commercially.

He said the edible plants could be divided into the following categories:-

Fruits and nuts

Starchy vegetables, cereals and other sources of flour

Cooked green vegetables

Condiments and seasonings

Coffee and tea substitutes

Edible oils

FRUITS AND NUTS

These included sea-grapes, cacti, pancake rose, wild blackberry, elderberry and bilberry. They provide edible fruits, dried nuts, pie flavourings, and in case of the elderberry, wine could be produced from the ripe fruit.

STARCHY VEGETABLES, CEREALS AND OTHER SOURCES OF FLOUR

Strips of the inner bark of the Caribbean pine could be dried, ground into flour and used to supplement wheat flour. Other sources of flour were the seeds of Job's tears and nutgrass. The rhizomes of the pancake rose, which grows profusely in Jamaica's south coast and was extensively used by the indigenous Arawak

---

*Reproduced from The Jamaica Daily News, 21 January 1977

population, could be cooked and eaten as a starch food. Dr. Proctor indicated that the production was comparable to yams and Irish potatoes, and therefore could be undertaken on a commercial basis.

COOKED GREEN VEGETABLES

In the cooked green vegetables category were listed water-grass, water hyacinth, wild chaney root, pussley and wild callaloo of which he said, there were about six species - all edible.

CONDIMENTS AND SEASONINGS

In this category were various varieties of wild ginger, black pepper, spirit weed and fennel. There were so many varieties of wild black pepper that they could well provide for the Island's needs of this spice. Currently, Jamaica imports $400,000 of black pepper a year.

COFFEE AND TEA SUBSTITUTES

A species of cassia could provide a coffee substitute, while tea could be substituted by a species of Cleyera, both of which grow wild in the Island.

EDIBLE OILS

All of the palm varieties which grow wild in Jamaica produce palatable sources of these oils. The Abbey palm, for example, was introduced there centuries ago, and though not generally used locally it was a commercial oil seed in some African countries.

In Dr. Proctor's opinion, rural Jamaicans did not make sufficient use of the food plants growing wild, and even in some cases, regarded them as 'noxious weeds'. ▲

FOOD PLAN THAT MUST NOT FAIL*

The Caribbean Regional Food Plan was a major issue of the Heads of Government meeting in St. Kitts in late 1975 and it received enthusiastic support from the delegations who attended that Summit Conference. And with good reason for the Caribbean area is supposed to be a mainly agricultural Region so that the level of food imports is nothing short of scandalous.

The Regional Food Plan was introduced following side effects of the 1973 fuel crisis and the accompanying rise in price of all goods which depended on petroleum products as inputs for their production. Fertilizers, pesticides, cultivation and transport are all facets of agricultural operations which require the use of petroleum products.

The situation in the Caribbean was ludicrous. Here is a rural community with centuries-old traditions of farming and all year-round sunshine with food imports at an unprecedentedly high level and every sign of soaring higher. So the Regional Food Plan was conceived with attention being paid to the development of grains, vegetables, fruit, fisheries and livestock.

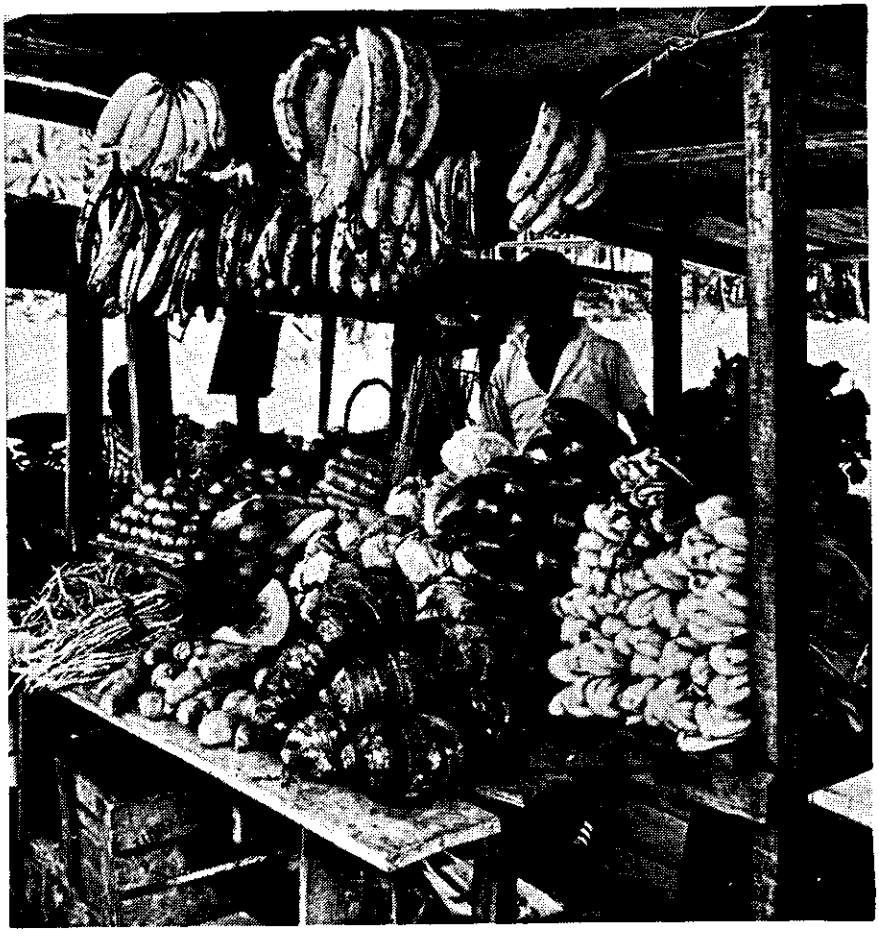
Specific areas in specific territories are being earmarked for production of crops that flourish best there: Barbados is expected to produce onions and black belly sheep; Guyana is already growing corn and soyabeans with some success in the experimental stages.

The predicament in which the Caribbean area finds itself with regard to food stems from limited funds, and inefficiency in marketing and production - which are probably offshoots of the former. How else does one explain the illogical situation in most of the Less Developed territories where seasonal gluts see tons of fruit wasted and rotting on the ground while the same territories import canned fruit juice from other territories.

---

*From The Advocate-News, Barbados, 6 May 1977

Barbados imports in the region of B'dos $98.2 million annually for food, with about B'dos $26.1 million of this for meat and meat products, totals exceeded only by Jamaica and Trinidad and Tobago in the CARICOM area, so the Regional Food Plan would be of primary interest to us especially in the light of our own problem-ridden attempts to increase food production.



Agricultural planning in the CARICOM Region must be oriented towards nutritional needs. It is important that the production and consumption of those nutrients in which diets are deficient should be encouraged. Can any reader send us a nutritious dish made up on the multimix principle composed of the foodstuffs seen in this stall?

[*Photo* © *PAHO*]

The dairy, poultry, pig and food crop farmers in Barbados - not to mention the sugar producers - all have cause for complaint, but the realization is clear that we must feed ourselves or starve.

It is a prediction of international experts that there will soon be a worldwide food shortage unless every effort is made now to maximize production in every country. The CARICOM planners seem to have realized the gravity of the situation when they hatched the Regional Food Plan. It has been emphasized that the Plan is working and that Guyana, which had already started planting 2,100 acres of land to corn, blackeye peas and soyabeans, would eventually build up the acreage to 20,000 and beyond.

That is heartening, but we have had regional efforts before now and most have been resounding failures. But this is one Plan that must not fail - the plight of neighbouring Haiti is an example of what would befall. It is a fate too grim to contemplate. ▲

CAJANAQUOTE

"Nutrition is but a component of agriculture which is by far the world's largest industry. As such, it is far too important to be left solely in the hands of nutritionalists (sic)."

- Ken Giles

New Scientist, p. 169, 21 October 1976

A NATIONAL FOOD AND NUTRITION POLICY AND ITS EFFECTIVE IMPLEMENTATION*

by

Curtis E. McIntosh

INTRODUCTION

Much has been written within the last five years concerning national food and nutrition policies. As such what is contained in this paper could be no more than a brief summary of the more important considerations on the subject, gleaned from these recent publications. I have, however, attempted to inject some of my own ideas so that your critique would be directed more towards me than on the authors whom I quote.

One of the basic objectives of the Caribbean Food and Nutrition Institute is to foster and assist in the formulation and implementation of national food and nutrition policies in Member States. Since these States are in varying stages in the formulation and implementation of such policies, an attempt is made here to put forward in a relatively simple manner those aspects of food and nutrition planning which are pertinent at all stages. This paper, therefore, focuses on the nature of a food and nutrition policy, the need for its formulation and implementation in the context of the Caribbean, the steps in the formulation of a policy and matters respecting effective implementation.

**Paper presented at the Annual Meeting of the Caribbean Association of Nutritionists and Dietitians, Guyana, 5-7 July 1977.*
Dr. Curtis McIntosh is Food Economist at the Caribbean Food and Nutrition Institute, Trinidad Centre.

THE NATURE OF A NATIONAL FOOD AND NUTRITION POLICY

The Inter-Agency Consultative Meeting on National Food and Nutrition Policies in the Americas in March 1973 defined a food and nutrition policy as "a coherent set of principles, objectives, priorities and decisions adopted by the State and applied by its institutions as an integral part of the national development plan in order to provide all the population, within a specified time, with the food and other social, cultural and economic conditions essential to satisfactory nutrition and dietary well-being".[1] Except for the emphasis on nutrition, this definition is a little short of total development which must be concerned with opportunities for gainful employment, satisfactory income level and distribution, stable prices, good nutrition and health, suitable habitat, adequate transportation facilities, favourable balance of payments, education and recreation, and such other facilities for social and cultural development.

The importance of a food and nutrition policy, therefore, is to create a greater awareness among development planners of the pivotal role of food, nutrition and health in development. Planners, I am sure, have always recognized the importance of nutrition and health as part of a social welfare function. Their quantification as indices of development may, however, have eluded them, thus making way for a preoccupation with employment, national income statistics, balance of payments and price levels. Even in the area of national income statistics performance has been unsatisfactory, with the result that the exact relationships between these statistics and nutrition and health status could not be discerned to allow for appropriate policy modifications.

A food and nutrition policy, by focusing on measures aimed at bringing into a desirable balance food supply, food demand and biological utilization of nutrients*, forces senior government personnel in various ministries and departments into a new kind of relationship to ensure that the nutritional implications of sectoral programmes are considered and the modified programmes are coordinated to maximize nutrition and health benefits.[1]

Literacy learning, an important feature of overall national development can be an appropriate vehicle for health and nutrition education, enabling people as they learn, to acquire knowledge and skills which will help them improve the quality of their lives.

**Food supply is concerned with both production and marketing including trade storage, processing and pricing. Food demand deals with the inter-relationship of prices and incomes and such other factors as population size, consumer education on food consumption. Biological utilization is governed by the prevalence of parasitism and infectious diseases, pregnancy spacing and lactation, physical activity and food allergies and toxicity.*

ESTABLISHING A NEED

The question addressed here is - Do regional States need a food and nutrition policy? The positive answer is based on the following food and nutrition data on Caribbean States which show a marked similarity among States.[7]

Approximately 1.4% of children in the Commonwealth Caribbean are severely underweight, some 12% moderately underweight and another 40% just below the desired minimum level. Anaemia is also prevalent in this group as well as in adult women.

There is an adequacy of nutrient availability tending to an excess supply but inequity in distribution leaves a high proportion of households with less than adequate nutrient supply. It is hypothesised that this phenomenon is highly correlated with inequity in income distribution.

The foodstuffs making the greatest contribution to total nutrient supply are imported. The costs of such dependence could be quite high in terms of foreign exchange problems, political dependence and national insecurity.

In the global context current food supplies are limited and extreme difficulties might be encountered in receiving supplies even if monies were available to pay. There are other aspects which could be considered but the evidence is sufficient to support a case for the need of a food and nutrition policy. In fact, regional States with their limited but differing resource endowments could maximize their benefits by aiming for a regional food and nutrition plan.

BASIC STEPS IN THE FORMULATION OF A POLICY

The basic steps in the formulation of a policy include:

(a) Problem identification and description

(b) Statement of objectives, goals and targets

(c) Identification of alternative projects

(d) Selection of projects and programme development

(e) Coordination of programmes with other sectoral programmes

Having formulated the policy, implementation must take place followed by evaluation and revision as appropriate.

Problem Identification and Description

The basis for problem identification is data collection and analysis. The principal focus of data collection and analysis should be in respect of the nutritional status of the population. Other important data regarding food supply, food demand and biological utilization of nutrients should also be collected and analysed. Data collection and analysis should reveal the nature and extent of nutrient deficiencies (or excesses) and their causal factors.

The description of the nutrition problem should be directed to answering the questions:

(a) What are the deficiencies (excesses)?

(b) Who are affected?

(c) How severe are the effects?

(d) Where are the affected?

(e) Why have they the deficiencies (excesses)?

In answering these questions the problems of food supply, food demand and biological utilization of nutrients would be highlighted.

The final aspect of problem identification and description is that of specifying the nutritional implications of existing policies and programmes affecting food and nutrition.

Objectives, Goals and Targets

The setting of appropriate objectives, goals and targets depends on an adequate description of the problem. The objectives should specify what are the ultimately desirable states in the nutrition and food status expected to be achieved at the end of the time horizon envisaged. For example, one such desirable state might be the elimination of all forms of nutritional deficiencies among all segments of the population within ten years. Another might be to decrease the import dependency on food supplies to under 30% within ten years.

Goals are concerned with sequential steps toward the objectives. For example, a goal might be the elimination of severe cases of protein-energy malnutrition and the reduction by 50% of moderate cases in children under 5 years of age by 1980.

Targets refer to levels and achievement desired of the means applied to objectives and goals. It might be necessary for achievement of the above goal to require, say, a 5% increase in the production of cereals in each year up to and including 1980 and a 100% increase in breast-feeding up to 4 months in a similar manner. These are specific targets for which projects could be mounted.

In practice, objectives, goals and targets are set up initially as preliminary and later revised to provide for internal consistency and practicability after consideration of the designed projects.

Identification of Alternative Projects

A problematic situation often could be solved by more than one option. In food and nutrition planning a step of major importance is the identification of alternative options and corresponding projects. There could be no denial of the proposition that a large number of adults experienced a satisfactory

nutritional status in infancy without being breast-fed. This situation points to alternative choices in infant feeding and alternative projects designed to improve the nutritional status. Project identification calls for a listing, as far as is possible, of all conceivable courses of action open to the planners. Projects could then be 'short-listed' after considering their nutritional implications.

Selection of Projects and Programme Development

Projects identified are developed in detail and compared against certain development criteria. These might include:

(a) Contribution to nutrition and health status

(b) Employment effects

(c) Income and income redistributive effects

(d) Inflationary aspects

(e) Balance of payments contribution

(f) Effects on the environment

(g) Contribution to social and cultural life

When breast-feeding is compared with alternative options, according to these criteria it certainly comes out as first choice and should be given priority in any food and nutrition programme.

The application of benefit cost analysis in a quantitative and sometimes subjective manner could guide the selection of projects singly or in combination. The selected projects are then integrated in an overall programme. At this stage modifications might be necessary in the objectives, goals and targets and the design of the projects. Because of the high interdependence of projects related to food and nutrition, various combinations of projects must be given serious consideration. A project weak in itself might be a better fit into a programme than another which is stronger.

Coordination of Programmes

After successful completion of the above steps, the draft policy should be in a state in which it could be integrated with other sectoral programmes to constitute the national development plan. Here all programmes are subject to modification to satisfy overall development objectives and to keep within development constraints. During this process, areas of responsibility for implementation should be assigned.

EFFECTIVE IMPLEMENTATION

There are certain necessary conditions that must be satisfied for effective implementation. The request and support by the Government for the formulation of a food and nutrition policy suggest a political commitment to deal with the problems of food and nutrition. The designed policy, however, must be acceptable to the Government. There is a strong possibility that the strategies prescribed by the planners may run counter to the political intentions of the rulers. In such a situation it is hardly likely that the policy will be implemented without modification. Development planners must bear in mind that the policy should be acceptable to the Government in power. It must be politically feasible.

Another important condition to be satisfied is the financing of the projects. Projects to improve the nutritional status by their very nature are not usually attractive investment opportunities since the pay-offs are often non-monetary and are extended over the long-term. Compare, for example, a national school-feeding programme with a meat processing plant. The latter stands a better chance of being financed by the State and other financial institutions. Unless special provisions are made for allocating to food and nutrition projects an appropriate part of the budget, the work of the planners would have been futile.

Very often budgets have been approved for development projects but long gestation periods were experienced before initiation of the projects. A major constraint here is administrative lethargy. Administrative performance has not always been satisfactory even where projects are within individual ministries or departments. Food and nutrition projects with their interministerial dependence are apt to present greater administrative problems. In this connection food and nutrition projects might be expedited by the employment of a food and nutrition Projects Administrator supported by a secretariat with the authority to eliminate administrative 'red tape'.

Another constraint in the implementation of food and nutrition projects is the availability of manpower resources at all levels - technical, managerial and skilled workers. Educational deprivation has led to serious imbalances in the supply and demand relationships for particular personnel. There is a surfeit in the arts but too few technicians; too many politicians, too few engineers; too much labour, too few skilled workers. Effective implementation of food and nutrition policies demand that adequate manpower resources must be available. In a regional context availability of manpower would be facilitated by a more liberal policy on the movement of human resources by regional States.

Also important for effective implementation of the policy is the availability of appropriate technology. Many food and nutrition projects require the development and/or adoption of technology not already known and practised in the society. Technology developments are time-consuming and the urgency with which food and nutrition problems should be dealt makes the availability of technology a prime concern in implementation.

Implementation could hardly be considered effective if it failed to satisfy those to whom the policy is directed. It is important therefore that those to be affected by the policy are

well informed of the effects of such a policy and the ways in which they could cooperate for its successful implementation. Indeed, they should be consulted during the development stages of the policy.

The final major condition to be fulfilled for effective implementation of the policy relates to the resolution of conflicts which inevitably arise in the course of implementation. Two important sources of conflict exist. Food and nutrition projects often run counter to the profit interests of private agencies. Consider, for example, the outcry of these sectors to a consumer education programme resulting in reduced sales of their product. The result could be the layoff of workers whose nutritional status is heavily dependent on that source of employment.

Then there is the labour-management conflict which tends to increase costs and make for delays in the completion of projects. Food and nutrition goals and targets might not be realised because of labour-management conflicts.

Effective implementation requires mechanisms for resolution of these types of conflicts. The policy, indeed, should be flexible enough to permit modifications to changing conditions. Given political acceptability, adequate finances, administrative support, manpower resources, appropriate technology, good communication and mechanism for conflict resolution, food and nutrition projects should find implementation pathways straight, smooth and short.

REFERENCES

1. Bengoa, J.M. and Rueda-Williamson, R. "Planning and Organization of a National Food and Nutrition Policy" in G.H. Beaton and J.M. Bengoa (Eds.) *Nutrition in Preventive Medicine*. World Health Organization, Geneva, 1976: pp. 419-444.

2. Berg, A. *The Nutrition Factor.* The Brookings Institution, Washington, D.C., 1973.

3. Bocobo, D.L. "Developing a National Food and Nutrition Policy". Paper presented at Workshop in Food Economics and Food and Nutrition Policy, Part II, Trinidad & Tobago, March 1976.

4. Cook, R. and Yang, Y.H. "National Food and Nutrition Policies in the Commonwealth Caribbean". *Cajanus* Vol. 6, No. 2, 1973: pp. 77-94.

5. FAO/WHO. *Food and Nutrition Strategies in National Development.* World Health Organization, Geneva, 1976.

6. FAO/WHO. *Food and Nutrition,* Vol. 1, No. 4. FAO, Rome, 1975.

7. Gurney, J.M. "Available Data on the State of Food and Nutrition of the Peoples of the Commonwealth Caribbean". *Cajanus* Vol. 8, No. 3, 1975: pp. 150-166.

8. Hakim, P. and Solimano. *Nutrition and National Development Establishing the Connection.* ((Mimeograph) Center for International Studies, Massachusetts Institute of Technology, July, 1975.

9. Lewis, A.W. *The Theory of Economic Growth.* Richard D. Irwin, Inc., Homewood, Illinois, 1955.

10. Abelson, P.H. (Ed.). *Food: Politics, Economics, Nutrition and Research.* American Association for the Advancement of Science, Washington, D.C., 1975.

11. U.S.D.A. "The World Food Situation and Prospects to 1985". Economic Research Service, U.S.D.A., December, 1974. ▲

SOME ASPECTS OF FOOD AND NUTRITION IN HAITI

by

*Hamilton B. Brown**

Readers of *Cajanus* are familiar with the problems of nutrition in the Commonwealth Caribbean and with the various programmes developed by their governments to help these problems. However, in other islands in the area, the nutritional situation is different. This report will highlight some aspects of nutrition in the Republic of Haiti.

Haiti is a country of rugged beauty like so many others in the Caribbean. It also has a glorious past, being the second country to achieve independence in the New World and the only one in which there was a successful slave revolution resulting in the attainment of freedom. It was from Haiti that Simón Bolivar embarked to free South America.

ECONOMIC FACTORS

The majestic beauty and valourous history hide the indescribable squalor which exists today in Haiti. The country is very crowded with a population in 1971 of 4,720,000 and a population density of 156/km^2 (490 persons per square kilometre of arable land). The average per capita income was US$100 in 1973.[1]

Perhaps more so than in Jamaica, there is a striking maldistribution of income. In 1962 the per capita income of the 1% wealthy elite averaged $800 per year; that of the 83% rural poor averaged $35 per year.[2]

**Dr. Brown is Medical Director of the Hospital de la Grande Rivière du Nord, Haiti - A Project of the Mennonite Central Committee and the Government of Haiti.*

Although the per caput gross national product has risen to $100.00 per year, the masses of rural poor probably have less than $60.00 per person per year.[1] This amounts to $.16 per person per day. Fortunately the peasant can get out of his garden, but even so he has very little cash to buy other foods, let alone the other necessities of life such as rent, medicine, education, clothes and taxes.

HEALTH INDICES

The desparate economic situation is reflected in the health indices which are compared in Table I to those of the Commonwealth Caribbean and the U.S.A. The infant mortality rate of 146 per 1,000 live births is the highest in the Western Hemisphere. Neonatal tetanus has been a leading cause of death until very recently, killing 15% or more of newborns. Gastroenteritis and pneumonia are also major killers of infants.

Table I: Comparison of Certain Mortality Rates

Country	Population In thousands (1973 estimates)	Infant Mortality per 1000 live births	1-4 Mortality rate per 1000 in age group
Haiti[1]	4,720	146	33.0
Commonwealth Caribbean[3]	4,912	33	3.9
Northern America[3]	--	18	0.8

The Haiti figures are taken from the Department de la Santé Publique *Plan de Santé*, 1975.

The mortality rate for 1-4 year olds is considered to be a good indicator of childhood malnutrition. The rate in Haiti is estimated to be 33/1000 children. This is eight times the rate in the Commonwealth Caribbean and 40 times the rate in Northern America. The leading causes of death are malnutrition, gastro-enteritis, and pneumonia. The latter two are often complicated by malnutrition.

NUTRITIONAL STATUS

A study was conducted in the mountains of Northern Haiti near the town of Grande Riviere in an area with 1500 - 1800 mm rainfall well distributed throughout the year, and a population density of 247/km^2. This study focused on the nutritional status of 857 children under five and compared the results with those from a recent nationwide study. The results are summarized in Table II.

Table II: Gomez Classification of Pre-school Children in Haiti

Study	Location	Year	Number Examined	Age Range	Percent Norm	1st	2nd	3rd
Present	Grande Riviére (Northern Haiti)	1976	857	0-6	19.3	35.9	31.5	13.6
Toureau et al[4]	Haiti Nationwide Sample	1975	1542	0-5	17.8	28.9	35.6	17.4
Gurney[3]	Commonwealth Caribbean	--	--	0-5	46.0	41.0	12.0	1.4

In Haiti 13.6% of the children were severely underweight (Gomez III) compared to 1.4% in the Commonwealth Caribbean. A further 31.5% were very definitely underweight (Gomez II). In spite of the large numbers of underweight children, kwashiorkor and marasmus were relatively rare. In 1959 Jelliffe found a prevalence rate of 7% for kwashiorkor. In the current study, four (0.7%) were found to have kwashiorkor and five (0.9%) were found to have marasmus. The low current prevalence was confirmed in a recent nationwide study (1.2% kwashiorkor, 0.5% marasmus).

Fortunately, early weaning is not the problem in rural Haiti that it is in other parts of the world. The norm is to breastfeed for 18 months, and many mothers postpone weaning until two years. This is not as true in the large towns where problems of infantile diarrhoea and marasmus appear to be occurring at an increasingly earlier age.

One striking problem was that the weight for age of children became worse as they grew older. Generally speaking, kwashiorkor is thought to be a disease of the recently weaned child; however, in this study the percentages of severely undernourished children increased steadily until age six. The reason for this is not clear. Perhaps it is a manifestation of the lack of food in the region; and that after the weaning period, the older pre-school child just cannot find enough food. No studies have been carried out in children over six to find out if the trend begins to reverse itself.

The effect of poverty can be seen in our study in Northern Haiti. When children of people who were regularly employed were compared to other children, the percentage of very underweight and severely underweight children (Gomez II and III) went from 7% among employed to 44% among unemployed. The average salary for workers in government institutions is probably around $60.00 per month. Thus a small amount of cash income does seem to make a tremendous difference in nutritional status.

The only serious vitamin deficiency in Haiti seems to be Vitamin A deficiency which is a tragic problem since it can lead to irreversible blindness. Conjunctival xerosis, which is an early sign of lack of Vitamin A, was found in 11.3% of the children. One out of 406 children examined was blind in one eye from Vitamin A deficiency. Two older children were also seen with unilateral blindness. This problem is now being approached by a Vitamin distribution programme sponsored by the Haitian Government and UNICEF.

FOOD AVAILABILITY

Dietary surveys and food balance studies confirm that there is a severe lack of food in Haiti. An evaluation of all dietary surveys concluded that the per caput intake of energy was 1700 kcal/day and of protein 41 gm/day.[2] These figures are compared in Table III with representative figures from the Commonwealth Caribbean and the FAO recommendations.

Table III: Per Capita Nutrient Availability
(From Food Balance Sheet)

Country	Energy Kcal	Protein gm
Haiti[2]	1700	41
Commonwealth Caribbean[3]	2713	67

Food balance sheets were prepared from the same source (Table IV). Because so much food fails to reach the market, and the market mechanism is so loosely structured, accurate figures are really difficult to obtain. It would appear that the major sources of calories in Haiti are cereals, especially corn, starchy roots and tubers, and sugar. Cereals and legumes make up the major sources of protein. Meat, milk and eggs make up only 16% of protein intake compared to 43% in Jamaica.

Fortunately for the consumer, the cost of food bought in the market is cheap. Table V lists the cost of buying the equivalent of 10 gms of reference protein in a rural market in Northern Haiti. (Reference protein is high quality protein such as eggs and mother's milk which is completely utilized for body building.)

It is possible to buy an adequate amount of protein for an 18-month old child at a very reasonable cost ($.05 for corn or beans or a piece of meat). The cost of buying 70 gms of protein for an adult would amount to about $.20 if one buys corn and beans. This would also provide 1900 calories.

The relatively low cost of food is very important since it would appear that even at that price the average peasant would have to spend almost all of his available income on food. The low cost of food, however, severely limits the possibility of improving agricultural productivity. Improvements in productivity require capital investment such as terracing the mountains and developing irrigation systems. There would also need to be continuing expenses for fertilizer and insecticides. However, the return to the farmer for increasing production of cheap foods would not pay for the costs of fertilizer and insecticide, let alone major capital expenditures. In fact, most of the improved irrigated land in Haiti is used to produce sugar cane and recently tobacco for export.

Table IV: Food Balance Sheet for Haiti, Source of Calories and Protein with Percentage Breakdown and Comparison to Jamaica

Product	KG Consumed Per Year	Calories Consumed (Kcal)	Haiti % of Total Calories	Jamaica % of Total Calories	Protein Consumed	Haiti % of Total Protein	Jamaica % of Total Protein
Total General	425.5	1700	--	(2945 Kcal)	41.0	--	(74 gm)
Cereals & Cereal Products	63.0	617	36	31	16.9	41	38
Wheat	6.0	60			1.9		
Corn	29.0	289			7.6		
Rice	9.0	89			2.0		
Sorghum	19.0	179			5.4		
Starchy Fruits, Roots & Tubers	115.0	282	17	15	2.3	6	10
Manioc	39.0	116			0.6		
Plantains	36.5	75			0.6		
Sweet Potato	21.9	54			0.6		
Sugar & Syrups	--	300	18	17	0.0	0	0
Pulses, Nuts, Oil Seeds	--	116	7	3	11.3	28	4
Beans	19.0	79			10.6		
Vegetables	43.0	35	2	1	1.3	3	1
Fruits	100.0	93	5	3	1.1	3	2
Mangoes	60.0	48			0.4		
Meat	8.0	50	3	7	3.7	9	16
Eggs	0.9	3	0	1	0.3	1	1
Fish	1.8	9	0	3	1.9	5	14
Milk & Milk Products	--	20	1	7	1.2	3	12
Oils & Fats	6.6	155	9	11	0.0	0	0
Miscellaneous	--	20	1	1	1.0	0	0

Notes: The Haitian balance sheet is taken from Beghin.[2] The Jamaican figures are from Gurney.[3]

Table V: Cost of Buying Food with Protein Equivalent to 10 gm Reference Protein in Rural Market in Northern Haiti

Food	Weight of Food Containing Protein Equivalent to 10 gm Reference Protein	Amount in Measures	Cost	Calories
Powdered milk (Black market CARE food)	37.5 g	1½ oz.	.02	137
Dried fish	19 g	--	.03	--
Congo peas plus Corn (maize)	40 g 80 g	2½ tbsp.} 3/8 c. }	.04	438
Dry beans plus Corn (maize)	40 g 80 g	2½ tbsp.} 3/8 c. }	.05	424
Beef	80 g	3 oz.	.05	181
Millet	230 g	1 1/8 c.	.06	786
Red beans	107 g	3/8 c.	.06	360
Cornmeal	230 g	1 1/8 c.	.06	834
Red bean plus Rice	40 g 80 g	2½ tbsp.} ¼ c. }	.07	419
Whole milk	375 g	1½ c.	.07	228
Eggs	82 g	2 eggs	.08	120
Peanuts	90 g	144 nuts	.08	507
Bread	275 g	27 squares	.28	846

Note: Calculated from market prices and standard food composition tables. Reference protein data from King et al[5]

SUMMARY

This brief summary of nutritional problems shows the seriousness of the problem in Haiti. The death rates among infants and young children are appalling. The percentage of poorly nourished children is four times that of the Commonwealth Caribbean.

The problem appears to be less one of nutrition than one of socio-economics. Until something is done to increase the economic productivity in the rural areas as well as in the cities, there will not be enough money to buy food. At the same time there needs to be a better distribution of national wealth. The rich are certainly poor by any international standard, but the average peasant earns less than one-twentieth of the élite. There needs to be a national food policy that balances the need for producing export crops with the need for increasing production of basic staples.

All of these changes are possible and have been at least partially achieved in other countries. However, there must be a national consensus and will to make necessary, and perhaps controversial changes.

REFERENCES

1. Department de la Santé Publique: *Plan de Santé* 1973.

2. Beghin, I., Fougère W. and King, K.W. *L'Alimentation et al Nutrition* en Haiti, Presses Universitaires de France, 1970.

3. Gurney, J.M. "Available Data on the State of Nutrition of the Peoples of the Commonwealth Caribbean". *Cajanus* Vol. 8 No. 3, 1975: pp. 150-166.

4. Toureau, S., Sommer, A. et al. *Assessment of Xerophthalmia in Haiti.* Report for the American Foundation for Overseas Blind and the Government of Haiti, 1976.

5. King, M., King, F. et al. *Nutrition for Developing Countries*, Oxford, 1973.

THE PRODUCTION OF HIGH-GRADE PROTEINS FROM PETROLEUM: A SOLUTION TO THE WORLD FOOD PROBLEM*

Q. What advantages do proteins derived from oil have over those from conventional sources - vegetables and cereals, for example?

A. They are the same proteins, made up of essential amino acids. But whereas cereal proteins lack certain important amino acids, lysine, in particular, proteins produced by micro-organisms, especially those derived from yeasts, have a high lysine content. Adding them to cereal flour produces a range of amino acids that provides the best nutriitonal value of protein.

Q. In other words, the combined protein value of meat and vegetables?

A. Precisely. And the world's food problem is largely a shortage of animal protein.** By mixing this yeast with wheat flour in a proportion of 12 to 88% respectively, the full spectrum of the amino acids found in meat can be provided.

Q. Does that mean we shall soon find petroleum-grown steaks and cutlets at the local supermarket?

A. I wouldn't go that far. Though certainly it would be possible to make elaborate foods with a texture resembling that of meat, as has been done with soyabeans.

---

*An *interview with Alfred Champagnat, a French Engineer who was awarded the UNESCO Science Prize for his work on the biosynthesis of edible protein from petroleum. Reproduced from The Jamaica Daily News, 2 February 1977.*

***This statement is in our view incorrect - Editor*

At present, however, petroleum-derived proteins are manufactured in the form of a cream-coloured powder, with no taste or odour, like dietetic yeast. This is the cheapest form. And this powder can be used as a fortifier for flour, baby-foods, pasta, cous-cous*, and so on.

Q. But it's mostly used, isn't it, for cattle feed?

A. Yes, for the time being. In most European countries these proteins are accepted as cattle feed, which helps indirectly with the human food situation: for example, every ton of yeast used to feed calves frees two tons of powdered milk for human consumption.

However, the proteins do meet the standards for human nutrition set by the United Nations Protein Advisory Group. A programme of tests was carried out over several years by an international organization with headquarters in the Netherlands. Every week we would send them bulk samples which they tested, first on rats - more than 60,000 of them were used - then on pigs, calves, poultry and all the other animals raised for food. The next - and final step - will be clinical tests that are due to start soon at the Massachusetts Institute of Technology, in the United States and in France.

Q. But won't people be afraid of eating products derived from oil?

A. Let it be clearly understood: there is no petroleum in the yeast which produces the proteins. The micro-organisms of yeast draw their sustenance from petroleum, just as plants feed on fertilizer. Wheat grows on chemical fertilizer,

---

**Cous-cous - a grain preparation used in certain parts of Africa.*

Editor's Note: It is related to Cou-cou, a Barbadian dish; see the article "Of Maize and Men" by J.M. Gurney in Cajanus Vol. 3, 1970: pp. 223-235.

salads on manure, but you don't find fertilizer in wheat flour or manure in lettuces. Every test has shown that yeast from hydrocarbons is completely harmless and has a high nutritional value.

Q. When did full-scale production start?

A. It began in 1972 or 1973 at Lavera, near Marseilles, and at Grangemouth, in Scotland. A plant with a much bigger capacity, is being built in Venezuela. Negotiations are also underway with other oil-producing countries.

Q. When you began your research in 1959, oil prices were relatively low. We all know what happened since then. Do you still believe that petroleum-derived proteins can be commercially competitive?

A. The oil price increase upset all forecasts. But it is still possible in oil importing countries to be competitive under certain conditions: the plants must have a capacity of at least 100,000 tons a year and crude oil, rich in paraffin, must be available.

In other countries, commercially, viability depends on the price of soyabeans, the protein traditionally used for cattle feed, which varies considerably according to fluctuations in the market. Oil producing countries, of course, are in a far better position.

Q. You mentioned the world food problem. To what extent can petroleum-derived proteins help to solve it?

A. As a result of the population explosion, world protein needs are growing much faster than the amount of protein produced by agriculture, livestock and fishing. Moreover, the day will come when agricultural production of proteins cannot be further increased because no more suitable land will be available.

Sea fishing has already reached its limit: it cannot be increased without harming ocean life. So we are left with nonconventional proteins, and among those that have been suggested as possible food sources - plankton, leaf protein and others - only micro-organism protein, that is, yeast-grown proteins, have been tested, approved and can benefit from a fully developed technology. At least 20 million tons of pure protein could be produced annually with an outlay of some 40 million tons of petroleum - about 2% of the world's oil production.

Q. Twenty million tons ... that's approximately the figure of the protein deficit foreseen for the year 2000. I should imagine that organizing production on this scale is likely to be a costly business?

A. Very costly. Huge investments would be needed, but then they are nowadays in every sphere of human activity. This is certainly the case with nuclear energy, the development of which has been stimulated by the oil crisis.

Editor's Note: There is a strong element of science fiction in this interview in our view. We prefer to pin our hopes on multi-mixes. Do our readers have any comments? ▲

CAJANAQUOTE

"A pair of substantial mammary glands has the advantage over two hemispheres of the most learned Professor's brain in the act of compounding a nutritious flued to infants."

- Oliver Wendell Holmes

THE USE OF RADIO AND TELEVISION IN NUTRITION EDUCATION*

by

May Maskow

The recent growth in public awareness and interest in nutrition has been particularly noticeable to workers in fields related to food, nutrition, or health. Several factors undoubtedly account for this interest. Through the media, consumers are constantly reminded of the world food supply shrinking in relation to a multiplying population. Inflation has brought rapid increases in food prices. Nutrient deficiencies are evident in several population groups. As these seemingly unrelated issues combine to raise a nutrition consciousness in individuals, we see policy-making bodies taking more than a fleeting interest in nutrition, an interest which probably stems from an awakening to the possibility that improved nutritional status may be able to decrease soaring health costs.

With this climate of heightened sensitivity to nutrition, a simultaneous increase in the proportion and amount of informative broadcasting has occurred.

It seems logical to predict that this increase in informative broadcasting, combined with the developing awareness of nutrition will spur the production of many kinds of nutrition education programmes.

At the present time, however, mass media nutrition education is primarily designed to educate, inform or entertain the viewing or listening public, and decisions regarding programme content are

---

Adapted from J. Canad. Dietet. Assn. 36(3) 1975. The author is Chairman of the Home Economics Department, Ryerson Polytechnical Institute, Toronto.

A more progressive and wide-ranging approach to the teaching of nutrition in schools and in the community can assist in the reduction and elimination of malnutrition.

[*Photo: R. Brammer* © *Ministry of Health, Jamaica*]

rarely in the hand of nutritionists. Some thought, nevertheless, should be given by nutrition educators on how best to use programming that might be available.

The first consideration is what is the ultimate goal of nutrition education for the general population? Surely it must be to achieve a behavioural change in food consumption patterns - a change toward nutritionally improved food choices.

BEHAVIOUR MODIFICATION

Behaviour modification is a very popular approach of psychologists and psychiatrists today. It is the recognized objective of many therapies and a great deal is being published on behavioural modification techniques. In its strictest sense, however, behaviour modification might suggest coercion without conscious desire. At this point we become aware of a possible ethical problem. Should people be coerced into a change of eating habits for the reason that it is better for their health and that their improved health status may in turn decrease the taxpayer's health bill? Undoubtedly, we recognize that free choice must exist. Behavioural change can, however, quite ethically be facilitated through creating opportunities for awareness, motivation, learning and choice.

If behavioural modification is the ultimate objective of nutrition educators, then it should be possible to review some of the recognized steps of behavioural change and relate them to education techniques used on radio and television. Four of these steps will be considered.

1. Awareness

The first is awareness. An individual must be aware of a problem and of his/her role in the problem if he/she is to make a change. Furthermore, he/she must be aware that a behavioural or

attitudinal change is desirable. Also he/she must be aware of 'where he's at' at any particular moment in relation to the desired change.

It should be possible then to produce nutrition education programmes which have the objective of making an individual aware of his/her nutritional status, aware of desirable change, aware of the problems which change may create, and aware of the long-range benefits of making such a change. Many would consider that the most significant part of this objective is helping a person realize his own particular state in relation to desirable change.

It should be noted here that, when planning education programmes to achieve any educational objective, it is usually effective to focus on a particular target group. The groups might consist, for example, of children, homemakers, senior citizens, teenagers, or pregnant women. The target group reached by radio and television will be dictated often by the time of the broadcast, and sometimes by the particular audience to which the broadcasting station has appeal.

2. *Motivation*

The next component of behavioural change to be considered part of nutrition education is motivation. If a person is aware that he has a nutritional problem or a nutritional status which should be improved, and is conscious that behavioural change is desirable, he can often be motivated to change. One of the most familiar kinds of motivation is that used by advertisers on radio and television.

Advertisers make no apologies. Their objective is to motivate the purchasing public to buy their products. Often promises and rewards are offered, if the individual buys the advertised product. In some cases rewards are direct and immediate. That is, the rewards are recognized as being directly attributed to the product.

Rewards, on the other hand, can be indirect and long-range. In a shampoo advertisement for example, the promised immediate reward may be clean hair with less tangles, while the indirect long-range promises may be popularity, status, and a good sex life. The promises made for diets prescribed for patients with diabetes and heart disease provide another example of the differing reward expectations. In the former the patient gets rather immediate relief and fairly recognizable results. In the latter a long-range promise of better health and possibly a longer life may never be recognized or even achieved.

The most effective rewards for behavioural change are the direct and immediate, providing, of course, that the promise materializes. This creates somewhat of a problem for nutrition educators. Direct and immediate results cannot always be promised as a reward for improved food consumption patterns. Moreover, long-range rewards for what might be difficult changes in life style are not always obvious.

It may be noted here that the act of motivating others into particular food habits appears to be emotionally satisfying (and is frequently gratifying) to some notable authors. When they are particularly good communicators, food faddists offer very convincing promises for both immediate and long-range reqards. They can be, and often are powerful motivators toward behavioural change.

Generally speaking, short radio spots of the 30- to 60-second commercial type are most effective for motivation. One cannot expect in 30 seconds, however, to communicate a great number of facts, to elucidate situations, or to create a basis of knowledge for wise food choices. People can be motivated, however, to seek knowledge and to gain facts. Moreover, nutrition educators who use this kind of motivation can feel ethically comfortable.

3. *Learning*

Learning, the next component of behavioural change, is the most obvious objective of nutrition education. If a person is aware that change is desirable and is motivated to change, he requires knowledge; in fact, he requires a wealth of information to use as a basis for solving problems and for improved decision making.

An effective programme designed to create a learning situation requires a much longer period than 30 to 60 seconds. Programmes of this type often range from 10 to 60 seconds.

Nutrition educators should not be steered away from initiating the occasional programme which encourages learning and which challenges the listener or viewer to think, to read good material, and to be well-informed about nutrition. In the present climate even the well-educated and the worldly wise are hungry for nutrition education. These individuals want more than recipes, they want education. If unsatisfied, they often resort to health foods. When a programme does not have appeal, the viewer or listener need only switch the dial. Must it be the informed who are 'turned off' by the lack of challenge in food guides and recipes? Education should be more. It can mean the opportunity to gain insight to discuss reflectively, and, to criticize intelligently in order to solve problems and to make choices meaningfully.

This is not to say that programmes should not be produced for the average homemaker who provides the family meals. They should be. But educational programmes should also be targeted to the intelligent and curious homemaker who prepares family meals, and for the intelligent and well-read individuals who eat them.

4. *Internalization*

A fourth objective which we work towards in nutrition education is internalization through follow-up and reinforcement. A most effective form of this is a question and discussion period which follows learning and which is led by an informed leader. Here individuals have the opportunity to relate new information to their own lives. They can form opinions, reflect and sift through details and relate thoughts and feelings to peers and to their group leader for reaction. Research has shown that decisions to change are often made in this process.

Providing opportunities for internalization of information is difficult - although not impossible - to incorporate into nutrition education programming. Assume that a well-planned series of radio broadcasts were produced weekly. It could be possible for community nutritionists to attract groups of people to meet together to listen, discuss, and prepare some feedback to the broadcast. Those who remember Farm Forum of the 'forties will recognize this format. Perhaps we need a Nutrition Forum of the 'seventies. Another more familiar mode of reinforcement through discussion is the open-line programme.

Peer group discussion is not quite as easily introduced on television. It might be possible to arrange, however, if there were well-produced series of videotapes on nutrition available to nutritionists in the community to take to their local television station(s). Immediately after broadcasting such a tape, a group of local people could be enlisted to follow with live discussion on camera. Questions regarding, and reactions to the information on the tape could be directed to the nutritionist.

The individuals selected for the discussion should normally be from the target group to which the taped educational programme was originally directed. In this way an attempt is made to stage an internalizing experience to which a viewing audience can relate.

It is this step where so much decision-making behavioural change takes place, that is likely to receive least attention from those who plan educational programmes. It may be that this kind of programme is difficult to produce, or that it is felt to have little entertainment value. Nutritionists, aware of the importance of internalization and reinforcement in nutrition education, might encourage including more of this kind of component in nutrition education programmes, and when time and occasion permit, provide input to their creative development.

SUMMARY

Nutrition programmes should be planned to meet defined objectives. They should be directed to specific target groups with the ultimate goal of creating behavioural change in food consumption patterns. Creating awareness of a nutritional need as being a problem with an individual, motivating a desire to be informed and to make better food choices, creating effective learning situations, and providing opportunities for internalization and reinforcement are four steps toward achieving this goal. While some programmes will incorporate several of these steps, for others time and format will dictate choosing but one. As opportunities for nutritionists to become involved in nutrition education on radio and television increase, considerations should be given to how this media can be most effectively used to encourage nutritionally desirable behavioural change. ▲

NEWSPAPER CLIPPINGS

GOAT'S MILK INDUSTRY TO START

From The Jamaica Daily News, 17 May 1977

Spearheading the move to develop a goat's milk industry in Jamaica is the Agricultural Development Corporation (ADC) which is currently building up herds of local females and crossing them with major milk-producing breeds of rams. The main breeds of imported rams being used are Nubians, French Alpines and Toggenburgs.

The ADC's goat expansion programme meanwhile, is being structured to produce both meat and milch goats for distribution to farmers. Ultimately, it is hoped that goat's milk will figure prominently in relieving malnutrition, especially in infants. The dairy goat programme is also being examined from the standpoint of developing district cottage industries based on the making of cheese for supply to a central processing plant. ▲

GOATS TO FEED THE NATION

From The Jamaica Daily News, 7 February 1977

The popular Jamaican goat's flesh from which is prepared "curried goat" and other "benefits" is being backed by the Agricultural Marketing Corporation (AMC) as a way to boost farmers' income, save foreign exchange and feed the nation. The AMC is now seeking to establish contract agreements with farmers for the production of up to 5 million lbs. of goat's flesh a year.

The Corporation's Executive Chairman said that no other meat was more popular with Jamaicans, and no other type of livestock was so independent of foreign imports of items such as feeds and medications. Goats can be grown successfully on grass alone and on hay during the dry seasons when forage is scarce. He said,

additionally, that goats are eminently suitable for dry areas which could not accommodate other types of livestock. He pointed for justification of the 5 million pound production target to the fact that some 60 million lbs. of poultry meat was produced last year and yet there was no surplus.

The Chairman said the AMC's requirements for goat's flesh could be met from about 12,500 acres of largely marginal and dry lands. It was a misconception, he said, that goats were unduly destructive, since when reared along scientific lines they were as docile as any other domestic animal.

The ADC has already imported rams of superior breeds of goats, but he expressed the opinion that the development programme should concentrate more on improving the indigenous breeds, instead of resorting to large scale imports of breeding stock. ▲

FIRST CARICOM CORN CROP

From the Sunday Gleaner, Jamaica, 19 June 1977

CARICOM countries generally stand to benefit from an expansive corn (maize) programme being implemented in Guyana. The first crop is scheduled to be reaped in the next few months. A newly-formed CARICOM Soyabean Company Limited, is cultivating 500 acres of corn, thus starting a six-year programme that could lead to large savings on importation for CARICOM countries. Ownership of the company is shared by the Governments of Guyana, Trinidad and Tobago, and St. Kitts/Nevis/Anguilla. The head office is in Guyana.

The six-year programme caters for supplying CARICOM countries with corn, soyabean and black-eye pea to the tune of 10,000 acres annually at the end of its estimated period. The first harvest of corn is expected to be reaped in September. It is understood that for the next two years, the company will only be able to

supply Guyana with its products, as the initial production mark will be below that which should be planted for wide-scale distribution.

Several obstacles were experienced during the initial stages of the project. At one stage, about 500 tons of lime had to be imported to be sprayed in the soil to make it suitable for the kind of crop being planted. One liming of the soil, however, will serve for three crops. Technical help is expected from Jamaica and an engineer from that country is due to arrive in Guyana soon. He will be responsible for the proper use and maintenance of all the company's machinery. ▲

STEADY RICE SUPPLY FROM CARICOM THIS YEAR

From The Daily Gleaner, Jamaica, 14 July 1977

The Caribbean Community (CARICOM) can look forward to a steady supply of rice at 'reasonable price' in 1977 from Guyana, the country's Agricultural Minister has said. He further stated that although Guyana was pushing for self-sufficiency in staple foods there would still be some commodities in the food market which the country would buy from the rest of the Region. Guyana was being favoured with excellent weather so far and first crops had produced good yields. ▲

EXPERIMENT UPS FISH POPULATION

From The Jamaica Daily News, 27 June 1977

The Fisheries Division of the Guyana Agricultural Ministry, has successfully carried out experiments on increasing the population of hassar, a tasty and highly demanded fresh water fish. The experiments involved induced spawning which can make hassar reproduce several times during the year instead of only twice.

Secretions from the pituitary glands of the male hassar were injected into the body of the female causing her to release all of the eggs in her body for hatching. In the experiments the eggs were protected against predators, thus increasing the chances of more eggs into fish. A female hassar lays several hundred eggs but usually only 2% grow to maturity.

The Chief Fisheries Officer said experiments were carried out in artificial ponds and water tanks, checked regularly to ensure that there were no insects or other predators to destroy the eggs or the young fish. The Fisheries Division is planning to distribute supplies of the fish to farmers with fish ponds as part of an effort to step up production.

The hassar is found in extremely limited numbers but there is no population count available. It is believed to be a threatened species, partly because of the diminishing traditional fresh water habitat due to greater agricultural activities and use of chemicals. Hassar has been much in demand, especially for curried fish. Up to recently 5 of these fish roughly 6 inches long and weighing 4 and 6 ounces fetched $10 (Guyana). ▲

EFFORTS TO COMBAT GASTRO-ENTERITIS IN TRINIDAD AND TOBAGO

From The Sunday Gleaner, Jamaica, 10 April 1977

Gastro-enteritis is a scourge of the Caribbean Region, Trinidad and Tobago's Health Minister reported at the Third Meeting of the Caribbean Epidemiology Centre.

However, he gave an encouraging report of national and regional efforts, in co-operation with the Pan American Health Organization, to combat gastro-enteritis and some other dangerous communicable diseases.

Trinidad and Tobago attacks the problem in four ways:

1. By improving the reporting of cases of the disease thus facilitating an improved study of the problem.
2. A joint committee of the Ministry of Health, Agricultural personnel and personnel of the Caribbean Epidemiology Centre (CAREC) keeps the situation constantly under review.
3. The Ministry of Health has embarked upon an environmental sanitation programme which called for stricter enforcement of public health legislation and increased vigilance by public health inspectors.
4. Increasing the potable water supply.

Editor's Note: Readers are reminded of the Strategy and Plan of Action to Combat Gastro-enteritis and Malnutrition in Children Under Two Years of Age, reproduced in Cajanus, Vol. VII, No. 5, 1974. ▲

LEGUMES - BIG BREAKTHROUGH IN AGRICULTURAL PRODUCTION

From Guyana Chronicle, 23 February 1977

During the last twelve years Guyana has made a big breakthrough in agricultural production, becoming a net exporter of food. In addition to increasing food production, the agricultural sector provided more jobs for farmers and created a higher standard of living in the Nation's farming communities.

During the second six-year period, a number of incentive schemes were started for farmers by the Government through the Ministry of Agriculture. These included a number of duty free concessions, inputs such as fertilizers and agricultural machinery. But perhaps the biggest strides were made in legume

production, an aspect on which great emphasis is being placed. The national legume programme is expected to supply the Nation with some 9.80 million pounds of legume by the end of 1978. This will be more than four times the 1976 production. At present some 10.2 million pounds of legumes are imported into the country annually and the Government is trying to cut down on this figure.

To boost the legume programme, Government also subsidized prices for fertilizers to farmers who are enjoying the use of dryers and shellers at a nominal price. Special credit facilities are given to farmers for the production of legumes and adequate transportation facilities are being provided by the Guyana Marketing Corporation, which has also provided storage capacity for 752,800 tons of dried beans.

In order to make legume production effective, the Ministry of Agriculture has mobilized a number of agencies to push the programme. It has also been conducting a number of exercises in legume production in order to make farmers more aware of its importance in feeding the Nation. ▲

INFANTS ARE SECOND CLASS PUPPIES

"Feeding newborn mammals a milk formula always entails some risks," warns the label on a puppy milk formula ... "all puppies should receive their dam's milk for at least two days if possible. The colostrum milk gives extra nutrition and temporary immunity against some diseases."

- Soho Weekly News
21 October 1976

NEWS BRIEFS

NUTRITION ON THE AIRWAVES

For ten minutes each week, listeners in the Eastern Caribbean can tune in to a programme called appropriately 'Consumer Concern' on Radio Montserrat, for hints, ideas and tips on wise spending, planning and preparing nutritious meals for the family and similar advice with a food and nutrition content, geared mainly to the homemaker.

Cajanus urges those of our readers who listen to this programme to send us their impressions of it, particularly its value in terms of changing or increasing nutritional knowledge and awareness, or improving food practices. ▲

NUTRITION COURSE FOR ADULTS

In Montserrat, also, a course on Nutrition for adults was conducted at the University Centre, Plymouth, during the months of February and March.

If any of our readers were in any way concerned with this course, *Cajanus* welcomes your views on its character, utility and interest. ▲

FOOD AND NUTRITION AGENCIES TO COLLABORATE ON MEDIA VENTURE

Representatives from the different food and nutrition-related agencies currently operating in Jamaica will be involved in the production of a bi-monthly general-interest publication on up-to-date food and nutrition facts, views and events on the local scene.

The aim will be to stimulate public interest in and action on food and nutrition issues with the ultimate objective of nutritional improvement. The collaborating agencies will form an Editoral Board to monitor and evaluate the project in conjunction with the producers, also to screen all items before publication. ▲

PRAWN PRODUCTION IN DOMINICA BEING INVISTIGATED

A team of consultants recently visited Dominica to investigate the possibility of farming the Malaysian Quanting prawn (known often as the giant freshwater prawn) or one of its close relatives. The prawn is in demand as a gourmet sea food and attracts high prices on the world market. ▲

SERIES OF WORKSHOPS IN FOOD ECONOMICS AND FOOD AND NUTRITION POLICY ENDS

The third and final in the current series of Workshops in Food Economics and Food and Nutrition Policy was held in St. Kitts from 18-27 July. During the Workshop, attention was focused on the issues, data sources and methodology relating to the formulation of a Food and Nutrition Policy. Data from the host country was used as the basis on which the participants drafted a model Food and Nutrition Policy as part of their training and orientation in this subject. Participants included 25 senior officers in ministries of government in Commonwealth Caribbean countries who advise on policy matters relating to the food and nutrition situation of their countries.

In the previous two Workshops a total of 71 Senior Government officers from 10 countries of the Region have received training, and are engaged in planning activities in those ministries of government which impinge, directly or indirectly, upon the development of food and nutrition policies and plans. These Workshops have significantly increased, both the number of trained officers, and the capacity of the individual countries of the Region to undertake independently the tasks of formulating, implementing and evaluating their national food and nutrition policies. ▲

PAHO/WHO FELLOW TO WORK ON CORNWALL PROJECT

Mr. Roger Andrianasolo, a doctoral student at Cornell University on a PAHO/WHO Fellowship arrived at CFNI on 18 July for a period of one year, during which he will be involved in the nutrition surveillance aspect of the proposed Cornwall Project of the Ministry of Health and Environmental Control, Jamaica. Under the direction of CFNI Public Health Nutritionist, Dr. Bill Simmons, Mr. Andrianasolo will undertake an evaluation of the anaemia control programme, a new clinical procedure which has been established in an attempt to upgrade MCH services in the County. Mr. Andrianasolo who is from Madagascar, has a background in biochemistry, microbiology and nutrition, and began his Ph.D. studies in International Nutrition in 1976. ▲

REGIONAL FOOD AND NUTRITION PLANNING HIGHLIGHTED AT CANDI MEETING

The Fifth Annual General Meeting of the Caribbean Association of Nutritionists and Dietitians (CANDI) was held in Georgetown, Guyana from 5-7 July. The theme of the Meeting was "The Regional

Food Plan and National Food and Nutrition Policies: Strategies for eliminating malnutrition in the Region". Discussions included the involvement of nutritionists and dietitians in regional food and nutrition planning, and the role of Health, Agriculture, Economic Development, Education and Community Development in the implementation of a national food and nutrition policy. CFNI was represented by Miss Manuelita Zephirin, Public Health Nutritionist who chaired the session on Training Programmes, and by Dr. Curtis McIntosh whose paper on "A National Food and Nutrition Policy and its Effective Implementation" has been reproduced in this issue (page 195). Other speakers included personnel from the CARICOM Secretariat, the Regional Allied Health Project and officers of the Guyanese Government. Mrs. Enolia Abbott, Chief Nutritionist, St. Croix, U.S. Virgin Islands was elected President of CANDI, succeeding Miss Eunice Warner, Nutritionist with the Government of Trinidad and Tobago, who served in this office during 1976-77. ▲

CARICOM ECONOMIST AWARDED PAHO/WHO FELLOWSHIP

Miss Veronica Regis, an Agricultural Economist at the CARICOM Secretariat, has been awarded a PAHO/WHO Fellowship in Food and Nutrition Planning. The Fellowship, tenable at Cornell University, U.S.A., is the second award of its kind, made through a special Ford Foundation grant in support of the work of the Caribbean Food and Nutrition Institute. Mr. Joseph Johnson of the Ministry of Agriculture, Jamaica, was the first recipient.

At Cornell, Miss Regis' programme of work will focus on the development of a policy for nutrition within the framework of the Regional Food (and Nutrition) Plan. ▲

FAO/WHO/UNEP CONFERENCE ON MYCOTOXINS

We have been asked by the Food Control Protection Group of the Food Standards and Food Science Service, FAO Food Policy and Nutrition Division, Rome, to announce a forthcoming International Conference on Mycotoxins which will be held in Nairobi, Kenya from 19-21 September 1977. It will be the first intergovernmental conference of its type, and is part of a programme on the control of contaminants in foods which also includes assistance in training to increase local expertise in applied research, surveillance and analysis to combat mycotoxin contamination. Further information may be obtained from the Food Policy and Nutrition Division, FAO, Via delle Terme di Caracalla, 00100 - Rome, Italy. ▲

FOCUS ON CFNI STAFF...

Mr. Peter Jutsum, CFNI Systems Analyst, was a participant in a Workshop on Simplified Dietary Survey Methodology, which was held from 6-7 June in Washington, D.C. This Workshop which was sponsored by the Assembly of Life Sciences, National Research Council, was an attempt to identify or develop a simple method of monitoring dietary intake which can be used as an adjunct to an anthropometric procedure designed to define the nature and extent of malnutrition among pre-school children.

CFNI Director, Dr. Michael Gurney, was a participant in the CARICOM Conference of Ministers Responsible for Health which took place in St. Kitts from 28-30 June. In St. Kitts also, he attended CFNI's Workshop in Food Economics and Food and Nutrition Policy, as a member of the CFNI team which comprised Mr. Kenneth Leslie, Mr. Peter Jutsum, Dr. Curtis McIntosh and Dr. Miguel Gueri

and members of the CFNI Administrative staff. From 3-8 July he was present at the PAHO Centre Directors' Meeting held in Miami and in Washington from 11-14 June and was a delegate to the 14th Meeting of the PAHO Advisory Committee on Medical Research at which Dr. Gueri was also present.

Dr. Miguel Gueri, CFNI Medical Nutritionist visited Dominica from 20-23 June to assist in the planning of the second phase of a Nutrition Survey, which was started in August 1976. He later attended the 14th Meeting of the PAHO Advisory Committee on Medical Research and was also present at the St. Kitts Workshop in Food Economics and Food and Nutrition Planning. From 1-5 August he conducted a pilot project on "Simplified Food Intake Recall Methods" in Trinidad and Tobago.

From 1-4 August 1977, Dr. Michael Gurney and Mr. Kenneth Leslie participated in an International Conference on "Measurement of Impact of Nutrition and Related Health Programmes in Latin America" in Panama, sponsored by the Pan American Health Organization.

The Conference focused mainly on the development and utilization of measurements which will indicate the impact of nutrition and nutrition-related programmes on individuals and families. It also attempted to identify the most appropriate outcome variables and to explore determinants of these outcomes, and is expected to lead to the preparation of a set of guidelines in health and nutrition, household economy, family composition and structure, educational attainments and social/economic skills designed for the use of researchers, planners and policy makers.

In fact, while the meeting was interesting and useful, these objectives were not met. It became clear to all participants by the end that it is usually impossible to *definitely* attribute any change in nutrition status to any particular intervention; human society is too complex to allow such a simplistic approach. ▲

CAJANAQUOTE

"For many years there have been attempts to step up the production of red peas in Jamaica with little effect ... It seems to us that, bearing in mind our past experiences, it is much more logical to concentrate our legume grain production drive on the very popular gungo pea which is far more hardy and high producing, and species such as the African red cow pea which has been growing in acceptance by the public.*

If we persist in concentrating on red peas production we could well reach self-sufficiency, but we submit that this self-sufficiency will be imposed by price restraints rather than the satisfaction of the true needs of the population."

- Canute James

The Jamaica Daily News
28 June 1977

**Pigeon pea (Cajanus cajan)*

POTATOES FATTENING? CHECK THE FACTS

Potato lovers who are trying to shed pounds are putting potatoes back into low calorie menus -- but with a difference.

Potatoes Calorie Count

Potato, baked	*1 medium*	*90*
Potato, boiled without skin	*1 medium*	*80*
Potato, boiled with skin	*1 medium*	*105*
Potato, mashed with milk only	*½ cup*	*63*
Potato, mashed with milk and pat of butter	*½ cup*	*93*

But...count the calories before adding...1 tablespoon of butter or margarine approximately 100 Calories; Parmesan cheese -- 25 Calories; sour cream -- 25 Calories; cottage cheese -- 17 Calories; yogurt -- 8 Calories; herbs and spices -- 0 Calories. Or -- trim calories with some slim toppings such as a spoonful of stewed tomatoes and coarsely grated cheese, melted butter or margarine thinned with lemon juice, or slivered green peppers.

- Food and Home Notes
28 February 1977

Editor's Note: Potatoes, whether boiled, baked or raw, contain about 70% - 80% of water by weight. This is why they do not have a high energy (calorie) density. If fried or chipped they lose this water and gain fat and therefore contain more calories for a unit size. Potatoes are not bad sources of protein (10% of their energy is protein energy). They contain some vitamin C too and small amounts of other nutrients. Your editor prefers them baked in their jackets and loaded with butter - very high in energy.

PROTECTION FOR THE CONSUMER: A DESIRABLE GOAL

Protection for the consumer is a subject which we have aired time and again in Cajanus and one which is becoming an important focus of public debate and controversy in food and nutrition circles. Many factors are involved in this debate, such as the safety, quality and wholesomeness of products sold in the marketplace, but one aspect of consumer protection which is sometimes overlooked is protection against misleading advertisements. This is discussed, in relation to vitamin and mineral supplements in the article on page 282 which advocates more socially conscious food promotion.

In our Newsbrief section, we report also the establishment of a Consumer Protection Desk in Guyana, which we hope, will become an active force in ensuring the nutritional as well as general quality of foods sold on the Guyanese market. Maintaining proper standards for processed foods as a means of eliminating inadequate or inferior products, is the topic of a Newspaper Clipping on page 289 .

The safety of the products we purchase is something no one likes to take for granted and in the absence of laws that affect and protect the consumer, he has no legal safeguards against either inferior products or misleading advertising. Besides assuring the consumer some guarantee against exploitation, the introduction of new food and drug laws in Guyana, which is recorded on page 289 should encourage competition among food manufacturers to produce only high-quality goods which will satisfy the most discerning tastes and comply with the regulations being established. We should not lose sight of the fact that large segments of the population, particularly those at the grassroots level, do not have correct nutrition information on which to base intelligent food buying decisions.

Lacking both proper medical supervision and correct nutritional advice, low-income consumers are often persuaded to squander their money on over-the-counter tonics and patent medicines, when buying a selection of foods which provide the key nutrients vital for health, might be a far cheaper proposition.

Manufacturers of foods and food supplements must formulate new policies governing the production and marketing of such items. There is clearly a need for more complete and accurate nutrition information on labels and promotional literature and this information should be developed in conjunction with nutrition specialists.

Food Advertising should comply with a Code of Advertising Practise, where one exists, and should ensure that the information which reaches the consumer is clear, consistent, coherent, and presents nutrition information accurately.

Any force which is as powerful in shaping consumer attitudes and decisions as the food advertising industry should be closely monitored to ensure that it will have a keen sense of its responsibility for conveying useful and reliable information and accomplish this in a manner that is fully in line with nutritional objectives.

THE EDITOR ▲

CAJANAQUOTE

"...Food has become: a source of profits, a tool of economic and political control; a means of insuring effective domination over the world at large and especially over the 'wretched of the earth'."

- *Susan George*
  "How the Other Half Dies: the real reasons for world hunger" Penguin Books, 1976

FROM OUR READERS

THE EDITOR, CAJANUS

Dear Sir/Madam:

For expatriate academics who were once resident in the Caribbean but have now returned to their homelands, a journal such as *Cajanus* provides an invaluable means of keeping abreast of developments in the realms of agriculture, food and nutrition. I am most grateful that my name has been kept on your mailing list since leaving UWI in 1972. Feature articles and clippings from *Cajanus* have enhanced my lectures to British students interested in West Indian agricultural problems, and I make a point of loaning copies of the journal to young scholars who wish to engage in additional reading on their own.

Next year, I am proceeding on secondment to the new University of Calabar, in Cross River State, Nigeria, a West African location with strong historical and educational links with Jamaica, and I anticipate a comparable interest in your journal on the part of young Nigerian geographers.

I trust that *Cajanus* will continue to flourish. In addition to photographic illustrations, could I encourage you to include a few maps from time to time, portraying for example the precise location of specific agricultural development projects? If necessary, I am sure that the Geography Department at UWI, Mona will be glad to assist in providing cartographic advice and technical assistance.

Professor Barry Floyd
Department of Geography
University of Durham
England

I would like to receive the bi-monthly journal provided by the Institute, *Cajanus*. Because I am working as Nutritionist on the Atlantic Coast of Costa Rica, I find myself working with many Caribbean foods which are also native to Jamaica, one reason being that the majority of the population are descendants of Jamaicans.

Any extra information that can be provided concerning food value, preparation, new food technology, as well as nutrition education materials, would be greatly appreciated.

Myra Warren
Ministry of Health
Department of Rural Health
San Jose, Costa Rica

Editor's Note: Miss Warren has started receiving Cajanus and was sent a list of the Institute's publications, as a preliminary to receiving the kinds of materials requested.

It is indeed a pleasure for me to inform you that your *Cajanus* publication Vol. 10, No. 1, sent to us a few weeks ago has proved to be very useful for both our lectures and students. The articles are informative and easy to understand.

I hope that you will continue to put us on your mailing list and till then, thank you.

Noraini Mohd Nor
Perpustakaan
Institut Kesihatan Uraum
Kuala Lumpur

In *Cajanus* Vol. 10, No. 1, 1977, you give a useful summary of metric measurements. However, your reference to "English Common Equivalents" may be misleading for liquid measures, since "English" pints, quarts and gallons differ from United States ones, and US measures are used in your final conversion table. Equivalents are, approximately:

	Imperial, UK, or English Measure	US Measure
Pints	0.57 litres	0.47 litres
Quarts	1.14 litres	0.95 litres
Gallons	4.55 litres	3.79 litres

Under the terms of the Treaty of Union of 1707 between Scotland and England, both countries agreed to adopt the measures then in force in England. These became known as "Imperial" measures, Article VII of the Act of the Scots Parliament, ratifying the Treaty, referred to the "...thirty-four gallons English barrel of beer or ale amounting to twelve gallons Scots, present measure." From these figures, a Scottish pint would be about 1.61 litres.

Incidentally, I note in a Barclays Bank Commodity Report of 18 February 1977, that World production of wheat and coarse grains (including maize) is expected to total 1,093.7 million tonnes in the year 1976/77. If this grain averages 350 Calories and 10 grams of protein per 100 gram portion, as suggested by tables of food values, then this grain alone could give a world population of 4,000 million over 2,600 Calories and 70 grams of protein per head per day throughout a year. This does not take account of World Potato Production of 218.4 million tons in 1976 reported in *Cajanus*, or of rice, cassava and other crops or livestock and dairy and fishery production. It is not clear whether the estimate of world production is based on what is expected to reach world trade or whether it includes what families grow for their own consumption, but it does seem

that the world produces more than enough Calories and protein for everybody. The problems are those of distribution and of the desire of affluent groups to convert cheap grain and pulses into luxury meat and dairy products. It seems sensible for any country which can do so to aim to be able to feed its own population from its own resources.

David Stevenson
Department of Tropical Community Health
School of Tropical Medicine
Pembroke Place
Liverpool, England

Editor's Note: We find Dr. Stevenson's comment on world food production salutary but perhaps somewhat simple. We will always have problems of distribution even if we get nearer to equality among mankind - a big if - so we don't really agree that the world produces more than enough calories and protein for everybody, although we agree that production is not the only problem, or even the major one for many countries.

Thank you for sending me a copy of Volume 10, No. 1 (1977) of *Cajanus*. I found this a most interesting number.

I note that your article on the Metric System (page 7) makes no reference to the topic that is of particular interest to nutritionists, namely the controversial one about the unit for energy. As you know, in the metric system known as SI, which has been adopted by Britain and many other countries, the unit of energy is the joule, and certainly in England this

has been adopted in nutrition circles. I don't know what the situation is in the Caribbean, but maybe the joule is being introduced there too.

With regards,

Dr. J.P. Greaves
Senior Programme Officer
UNICEF
(South Central Asia Region)
New Delhi, India

Editor's Note: Dr. Greaves' comment was well taken. If we are going to describe metric units in a nutrition journal, we should mention the joule however dimly it shines. ▲

SCIENTIFIC SLIMMING

As all weight watchers know, the energy value of food is measured in calories. But at the end of 1977, the calorie is due to be replaced by the joule - which is a standard unit of energy used by scientists, and suitable for slimmers as well.

In the past, we've measured the energy of food in kilocalories (1000 calories), and called them Calories, using a capital C. The equivalent new unit to the Calories (kcal) is the kilojoule (kJ,1000 joules). To convert, all you have to remember is: 1 Calorie = 4.2 kilojoules. So a strict dieter will now have to aim at 4,200 kilojoules rather than 1000 Calories. From the beginning of next year, food labels should use the terms joules or kilojoules. So you may come across low-joule foods, to be used in joule-controlled diets.

- WHICH

July 1977

TOPICS AND COMMENTS

HEALTH POLICY FOR CARIBBEAN COMMUNITY ADOPTED*

A health policy for the Caribbean Community was adopted at the CARICOM Health Ministers' Conference held in St. Kitts from June 28-30.

The policy is rooted in the urgent need to take health care to all the people of the community, irrespective of their ability to pay at the time of receiving attention.

The conference, attended by 86 participants including Ministers of Health of member countries and observers from PAHO and WHO and other national and international agencies, reaffirmed that health was an integral part of the development process.

A press release issued by the Caribbean Community Secretariat stated that the policy reaffirmed the need for special provision for the "high-risk" groups and the "underserved - the poor" - those living in rural areas, young children and mothers.

FOCUS ON FAMILY LIFE EDUCATION

Great significance was attached to family life education and the conference recognised that the approach to the problems involved many departments, including education, community development, labour as well as health.

The conference recommended that higher priority should be given to sex education in schools and to special programmes for pregnant school girls.

As a result of this, the Secretariat was requested to convene a Caribbean meeting on the subject of Health and Youth and to bring the issues to the notice of the Heads of Government Conference.

**From the Daily Gleaner, Jamaica, 18 July 1977.*

The improvement of enviromental health has to be seen as part of a total development effort and closely co-ordinated with other programmes for social and economic development.

DENTAL HEALTH

The conference considered the report of the recent workshop on dental health strategy and decided to abandon the present service of mass extraction of diseased teeth and replace it with a true dental health programme.

Such a programme would give priority to preventive measures commencing in early childhood, to the use of fluorides and to the training of auxiliaries so that they become the major part of the dental health team.

It also placed emphasis on economic measures such as the use of simple and inexpensive techniques and equipment, the utilization of community health aides, the team approach and the dental health education of the community.

MENTAL HEALTH PROGRAMMES

The Secretariat was requested to examine and report on the care of mental patients and the mental health programmes in the Leeward and Windward Islands and work out, if possible, a shared psychiatric service for the Islands.

MEDICAL CURRICULUM REFORM

The Medical Faculty of the University of the West Indies reported on its efforts to make the curriculum more relevant to the needs of the changing Caribbean.

The Vice-Chancellor of the University was requested to set up a permanent committee comprising representatives from Ministries of Health, the relevant health professions and the community, to give the faculty continuous advice on educational policy and the reform of the curriculum.

The conference recommended that a Caribbean Regional Consultation on the utilization of Health Education should be arranged and that the Caribbean Examinations Council should introduce an 'O' Level type of examination on Caribbean and World Health.

There was also concern about the need for a regional system of standards for the care of patients in hospital and the Secretariat was requested to bring together a small multi-disciplinary group of people from the Caribbean to prepare a list of standards strictly relevant to the Caribbean conditions.

It was tentatively agreed upon that the next meeting of the CARICOM Health Ministers would take place in St. Lucia.

Editor's Note: In Resolution No. 12 on Caribbean Food and Nutrition Planning, the Conference reaffirmed the request, made at the Second Ministerial Conference and endorsed by the Standing Committee of Ministers of Agriculture that the Regional Food Plan should be re-named the Regional Food and Nutrition Plan. It was also recommended that CFNI, in conjunction with the UWI and the CARICOM Secretariat, convene a technical meeting with a view to identifying means to rationalize the industrial production of weaning foods in relation to the Regional Food and Nutrition Plan. This was considered highly necessary in the light of current inadequate weaning practices in the Region and the prevalence of malnutrition, particularly in young children.

Destructive aquatic plants which clog marshes, swamps and waterways can be converted into food, animal feed, fertilizer, paper or even energy all over the world.

- Nutrition Today
March-April 1977

NEW PRODUCTION DRIVE ON*

A programme aimed at vastly increasing the contribution of the island's schools system to agricultural production as well as to produce young people with skills in scientific farming has been introduced by the Ministry of Education, Jamaica.

Apart from the commercial and vocational aspects of the programme, a very important departure from past programmes is the decision to treat the schools' agricultural enterprises as any other farming activity for the purposes of awarding government loans, incentives and other benefits.

Wherever possible, minimum acreages will be provided for each category of school, on the basis of 10 acres for each primary school, 20 acres for each secondary school and 50 acres each for vocational or agricultural institutions.

The programme is part of a wider one designed to improve agriculture in rural communities. It seeks also to provide skilled workers in the field of agriculture and home economics "in order to increase agricultural production and to promote the conservation of agricultural products by processing and preservation".

The curriculum is geared towards the production of skilled secondary school agricultural graduates capable of filling positions in the various agricultural agencies, teaching food processing, agro industries and in farm mechanics. It is also anticipated that several of the products of the system will go into own account farming.

According to a document setting out the programme the curriculum is designed "to prepare the student for entry into the productive sector of the economy, or to continue studies in specialized areas. A student will spend approximately one half of each

---

*Reproduced from the Daily Gleaner, Jamaica, 20 July 1977.

school day in the classroom or laboratories and the other half learning the various skills required in agriculture, home and community development".

The involvement of schoolchildren in small-scale agricultural projects such as school gardening can successfully complement a nutrition education programme and also make a vital contribution to food supply.

The document continues: "the instruction deals with practical agricultural problems and includes subject matter and learning experiences necessary in the production, processing and marketing of plants of animals of their products".

Up to the end of June 1977 64 schools had already applied for loans for their farms amounting to about quarter million dollars. Processing of these applications have already begun.

An indication of the potential of the schools system to contribute to agricultural production in the country is given by the fact that currently about 500,000 pounds of broiler meat, 100,000 dozen eggs, 15,000 rabbits, 4,000 goats and 5,000 pigs are expected from the various projects. This, of course, only refers to livestock production and though the figures for crop production have not been given, even higher production is expected there.

Another arm of the programme will involve the building of two Vocational Agricultural schools at Elim in St. Elizabeth where construction is expected to get underway in a few months, and Passley Garden in Portland. Accent is to be placed on integrating the courses of study with the community and, to this end, a programme to test this concept is already underway at Dinthill in St. Catherine. Sixty students were selected to begin the programme and additional agricultural facilities and equipment provided.

This project now has a 2,000-bird broiler unit, 12 breeding sows, a slaughter house, a plant propogator, agricultural laboratory and classroom. The project is being closely monitored by the Agricultural Section of the Ministry of Education.

The Knockalva Agricultural Training Centre is also to be expanded and upgraded. Here will be included a dairy teaching centre to serve the community, which is in close proximity to the Cornwall Dairy project. A hostel is to be constructed to accommodate 250 students of both sexes, dairy sheds, milking parlour, silos for fodder conservation and storage. Anciliary equipment, classrooms, staff accommodation and other facilities are being provided.

Attached to the Centre will be experts in horticulture, dairy farming and mechanical technology.

Already there have been many positive signs that agriculture, long regarded as the bottom of the scale, is becoming a much sought after "respectable" profession.

The schools are now gearing to produce what might be termed "a new breed of farmers". ▲

AZTEC DIET SUPPLEMENT?

That the ancient Aztecs practiced human sacrifice, cutting out the hearts of their victims on altars atop the stone pyramids of Central Mexico, is well known - as many as 250,000 in a single year, by one estimate. The bloody ritual may have been less religious than nutritional. Alone among great world civilizations, the Aztecs had no domestic herbivores to satisfy their need for animal protein, nor was there wild game in any abundance. Instead, the Aztecs resorted to "hunting" their own kind, bringing back large numbers of war prisoners from other tribes to be fattened, sacrificed, butchered and ultimately consumed. However bizarre this cannibalism theory may sound, it offers an intriguing explanation of the Aztecs' vital interest in human sacrifice.

- Intercom
June 1977

Editor's Note: We prefer the multimix principle and recognize "no need for animal protein".

THE WHY'S AND WHEREFORE'S OF FOOD SHORTAGES*

By Carole Walker

These days, consumers doing their weekly food shopping have come to live with the expectation of shortages of at least two or three basic food items. Numerous are the reasons that have been advanced to explain these shortages and perhaps even more numerous are the methods that consumers devise to cope with shortages.

Let us examine some of the real reasons for food shortages and see what is being done to cope with the problem.

Last year, Jamaica imported some $85 million worth of food. This year, even though we have cut back substantially on most imports, Government has allocated some $75 million to pay for imported food. This means that only $10 million less imported food is coming into the Island this year and basic foods which promote good nutrition have continued to be given high priority on our list of imports.

There still remains the problem of distribution, that is, seeing to it that everybody gets a fair share rather than a few getting most of what is available and the majority sharing the 'what lef'.

Prices Commission investigators continue to keep a careful check on supermarkets and groceries in an effort to cut down on hoarding, which is a breach of the Trade Act. However, the Prices Commission alone cannot always be aware of what is going on in every retail establishment in Jamaica. So, anyone who has reason to suspect that a trader is hoarding food illegally, is encouraged to inform the nearest office of the Prices Commission.

---

*An API news feature. Carole Walker is an Information Officer attached to the Agency for Public Information (Jamaica).

On the other hand, some form of rationing is being widely practised by retailers and this is understandable where real shortages exist.

Hoarding can actually take place on several levels. There is the consumer who can afford to buy out large quantities of a scarce commodity at the time when it is available. This is also understandable but it leaves other consumers who cannot afford more than one or two items at a time, or who get there later, at a disadvantage. This is where rationing, fairly administered by a supermarket or grocery, is commendable.

The National Consumers League sympathizes with the reasons why consumers hoard, but has appealed to them to discontinue this practice as it is unfair to other consumers. Government rationing would be very difficult to administer but if it became a reality, it would be done on the basis of need and not the ability to pay. This would mean that persons with large families would be allowed to purchase more than persons with small families.

Another level of hoarding has to do with some higglers who have fantastic marketing intelligence and know just when to buy and sell in order to reap huge profits. Many higglers purchase from wholesale and retail outlets at normal or inflated prices. The effect of this is to create artificial shortages or worsen existing shortages. And consumers are forced into purchasing from higglers by the unavailability of the particular item at the controlled price in the traditional retail outlets.

This obviously makes a mockery of official price control mechanisms; so Government has decided to enact legislation to make it illegal for controlled items to be sold outside of licensed premises.

However, higglers do have a very useful role to play in the distribution of goods and it is not Government's intention to prevent them from making a living. With the increase in local

food production which must take place if the nation is to survive, higglers will certainly have an important place in effecting better distribution of locally produced fresh produce.

Now let us look at local food production and some of the reasons why it is unable to cope with demand at present. First, a look at protein production. Here, domestic animals such as pigs, goats and cows all compete with humans for imported food such as corn and soya.

As an example of how Jamaicans could show more self reliance, we need only look at a Cuban parallel. Cubans feed cattle on cane-tops and molasses among other products, thus cutting down on imported animal feeds. In contrast, during 1976, we in Jamaica destroyed one million tons of sugar cane tops which could be used in cattle feed.

Cassava, imported from Africa, comprises roughly 20% of animal feed produced in Germany while Jamaica, where cassava can flourish, does not even grow enough to meet her human needs.

Local starch production has still not been able to give us one pound of starchy food for 29 cents, which is the price we pay for Guyanese rice. It's easy to say people should eat bananas, yams, sweet potatoes, etc. But while some rural folk may be able to get away with this some of the time since they can grow their own food, urban dwellers cannot afford the higher prices for local starches.*

So we must continue to import rice, for at least the next five years, by which time it is hoped that local production will meet demand.

**Editor's Note:* *Cereals (rice, corn, wheat) contain, pound per pound, more energy and protein than starchy fruits such as bananas, breadfruits etc., or starchy roots and tubers such as sweet potatoes.*

It is obvious, therefore, that we will continue to eat imported food until we have put our own house in order. That will call for better informed and more efficient farmers, more farming technology, more adequate transportation and roads, as well as irrigation for many more acres.

Finally, a word about the rural shopkeeper. When a rural shopkeeper is located far from the main population centres, transport adds appreciably to his overhead expenses. Added to this, in the past three or four years, inflation has threatened to price many goods out of the market. Government, in trying to keep the lid on prices, has applied a rigid price control mechanism. Maximum selling prices of basic foods and other necessary items have been set by Government at a rate which allows a very small margin of profit to the retailer.

Many rural shopkeepers, operating on a small turnover, are hardly able to earn a living. Again, the rural shopkeeper purchases a relatively low quantity of any one item and is often unable to buy at wholesale prices. The solution to this quandary is seen in the coming together of a number of rural shopkeepers from neighbouring districts to form cooperatives. Buying collectively, they would always be assured of paying at wholesale rates. Transportation would be shared so individual costs would be less.

Many people are concerned about food shortages and these ideas have been put together in the hope that they will help more people to understand the various interwoven causes. Maybe, by understanding, you will be in a position to help others who are concerned about our food problems. ▲

LACTATION, FERTILITY AND THE WORKING WOMAN*

INTRODUCTION

This subject, of great interest to doctors, other health workers, those involved in family planning and in nutrition, programme administrators, and all interested in the welfare of mothers and babies, was discussed at an important Conference held in Bellagio, Italy, from 5 to 12 July 1977. The Conference was organized jointly by the International Union of Nutritional Sciences (IUNS) and by the IPPF. Twenty participants from 15 countries and a variety of disciplines attended.

The purpose of the Conference was to suggest ways and means of enabling the working mother to combine her two roles - those of a mother and a productive worker - with the support of necessary legislation and social measures.

Initially the participants reported on the general trends in breast-feeding (particularly its present decline) and the problems facing working women in the areas from which the participants came. This led to discussion on approaches which could be used to safeguard this practice in those communities where breast-feeding was customary, and to a consideration of halting the decline in breast-feeding in industrialized countries.

Research had shown that breast-feeding provided not only the nutrition essential for a child's development and some protection against infection, but also the interaction between mother and child which was important to emotional development. Lactation was

---

*Reprinted with permission from the IPPF Medical Bulletin, 18-20 Lower Regent Street, London SW1Y 4PW, England. This is a short report about some of the main points to emerge. A full report of the proceedings will be published by IPPF later.

also an important biological factor in birth spacing.

TRENDS

Traditionally, women's work had been in or near the home, much involved in child-rearing. The emancipation of women, however, had changed this accepted domestic role and encouraged women to seek salaried employment, usually distant from their homes. This change had long been established in industrialized countries, but now the urban areas in the developing countries were adopting this practice.

As a result of this new life pattern, and the dual role of the working woman, breast-feeding was declining. Lack of support by health services, inadequate education of health workers, and the production and promotion of milk substitutes by the infant-food industry all played a part in this decline.

The use of bottle-feeding by the working woman in developing areas had led to serious health problems in the children (diarrhoea and marasmus), as well as smaller birth intervals and a subsequent increase in the number of births.

As a result of current research, there had developed a revived awareness of the benefits of breast-feeding and an urge to provide facilities for working mothers to continue to breast-feed their children, even when working away from home. This Conference was one outcome of this new awareness of the problem.

SUGGESTED MEASURES

The Conference delegates made far-reaching recommendations for the provision of essential services which would help nursing mothers at work. These would involve governments, health personnel, community workers, industrialists, trade unions, and international voluntary agencies and organizations.

The recommendations included the recognition of the dual role of women, in that they had a right to work outside the home, if they so wished, as well as bear children, which was an essential part of a nation's development.

During pregnancy and following delivery, a mother's health had to be safeguarded, and such protection should be continued until the child was at least six months old in order to help the continuation of breast-feeding.

Some of the measures suggested included a minimum period of three months' maternity leave, the development of social support services suited to and beneficial for both mother and child in different societies, and the provision of suitable facilities for the working woman to breast-feed her child. The cost of any measures instituted should be the responsibility of the society or community as a whole, and not fall on the employers or the working mothers.

RECOMMENDATIONS

(1) A survey should be undertaken into the implementation of existing International Labour Organization (ILO) Conventions in relation to maternity leave and lactation regulations, the provision of facilities to enable mothers to breast-feed their children, and the provision and supervision of crèches.

This should be a world-wide survey, including countries which had or had not ratified the ILO Conventions, or had legislation peculiar to their own country, as well as those which gave no benefits at all for the working mother. The information should be presented so that comparisons could be made between different legislative measures and their enforcement in different countries.

Issues raised at the Bellagio Conference should be included in the next version of the ILO Conventions on Maternity Protection. It was also important that influential leaders in health, family planning and related fields should challenge governments which were not providing maternity benefits for working women. They should also draw attention to the harmful effects of uncontrolled advertizing of infant substitute milk formulas.

(2) Multi-national interdisciplinary studies should be undertaken, covering the influence of the various factors affecting breast-feeding trends in relation to the different work patterns of women outside the home. Such studies should include developed and less developed countries, and those with differing social and political systems.

(3) Analyses should be undertaken of the means used to make breast-feeding easier in different communities - nursing breaks, day-care centres, crèches, flexible working hours, part-time work schedules, incentive payments, and development of home industries. Comparisons should also be made of the cost-effectiveness of the different systems used.

BREAST-FEEDING AND FERTILITY REGULATION

Prolonged breast-feeding was considered to be a more effective method of fertility regulation world-wide than the use of other forms of contraception. Unless she belonged to a culture where sexual intercourse was forbidden during the breast-feeding period, the woman who returned to work a short time after giving birth and who could not continue to breast-feed her child fully, was at risk of an unplanned and unwanted pregnancy. This was because the maternal hormonal changes helping to suppress ovulation that were brought about by suckling would not be fully operative.

It was therefore essential that advice on preventing unwanted pregnancies and the provision of suitable forms of contraception should be part of the supportive measures available to the breast-feeding working woman.

It was stressed that hormonal contraceptives should be avoided except when specially indicated, as their effect on the quantity and quality of breast milk was uncertain. There was also the unresolved question whether such hormones could be transmitted to the child through the mother's milk. Conclusive data on these matters were unlikely to be available for many years. If hormonal contraceptives were thought necessary during the time of breast-feeding, the only ones that should be prescribed were progestagens alone, either by mouth or by injection. IUDs did not seem to affect the milk, but barrier methods (condoms or diaphragms) were to be preferred during breast-feeding, where their efficient use could be guaranteed.

Ideally, the work-force should form its own supportive group for advising on contraceptive services in association with breast-feeding. Family planning associations and other agencies needed to work closely with trade union leaders to ensure the provision of such essential services to groups of workers.

EDUCATION

It was evident that education played an important role in the hoped-for implementation of international legislation to provide essential protective services for the working woman in her desire to breast-feed her child fully. The educational techniques to be used would be wide and suited to all sections of the community, including politicians and public administrators who would be responsible for the policy decisions. The support of WHO, ILO, UNICEF, FAO, IUNS and IPPF would be necessary to keep the subject of breast-feeding before all communities as an essential factor in the development of healthy children.

PROPOSED AREAS OF RESEARCH

While the participants agreed that this was a worthwhile Conference, there was still much research to be done. The following were a few of the areas that needed to be studied:

(1) The effect of stress and anxiety in urban and rural situations, in relation to ability to breast-feed by working women.

(2) The identification of environmental pollutants which might be harmful to pregnant women or might be excreted in human milk.

(3) A continuing analysis of the methods of agressive advertizing, promotion and marketing of products for infant feeding on the pattern of breast-feeding, expecially among working women in developing countries.

(4) The duration of post-delivery and lactation amenorrhoea in different work and social conditions and situations, so that a more accurate starting-point for contraception could be obtained.

(5) Appropriate family planning methods for working women in developing countries.

(6) The effects of hormonal contraception on breast-feeding and on the health and well-being of the infant.

(7) The possible effects on working women and their babies of breast-feeding *only during their time away from work.*

(8) Education and information approaches in different socio-cultural environments and circumstances.

(9) The testing of curricula for all stages of formal education, including that of health workers.

(10) Devising and testing evaluation methods.

CONCLUSIONS

This was a subject which could not rest solely on findings from national and international bodies, but was also a matter of importance to agencies interested in labour and industrial relations, as well as to those concerned with the improved status of women and their participation in the development of the affairs of their countries. The subject of breast-feeding and family planning in the working woman should be included whenever possible in health and nutrition conferences and seminars.

International leadership would rest jointly with WHO and ILO, and they would be responsible for keeping governments and non-governmental organizations and other interested bodies informed of future recommendations for legislation to promote breast-feeding, especially in the working woman. It was recommended that these two bodies set up a working party to establish ordinating machinery for international action to promote breast-feeding. ▲

CAJANAQUOTE

"The most important requirement for the alleviation of malnutrition is for the developing countries to double their own food production by the end of the century. We are convinced that this can be done given the political will in the developing and higher-income countries."

- World Food and Nutrition Study: The Potential Contribution of Research

National Academy of Sciences, 1977.

Editor's Note: (See however the letter from Dr. Stevenson on page 246.) Do readers have any comments?

NUTRITIONAL STATUS OF YOUNG CHILDREN IN THE ENGLISH-SPEAKING CARIBBEAN

by

Miguel Gueri

INTRODUCTION

This report which has been compiled at the request of the 1976 meeting of the CFNI Advisory Committee on Policy, provides a "profile" of the nutritional status of the children in the English-Speaking Caribbean.

The data comes from various sources which are described in the text. Therefore, caution should be exercised before making any attempt at comparison between countries.

For more detailed information on nutritional status in each of the territories, the reader is referred to the comprehensive list of references.

I. WEIGHT FOR AGE

Sources of Data

1. Antigua

   13% systematic random sample of Child Health Clinic records of children attending during the first eleven months of 1975.[1]

2. Barbados

   Data from the 1975 Nutrition Survey carried out by the National Nutrition Centre.[2]

3. Cayman Islands

   (a) Child Health Clinic records for the first six months of 1975.

   (b) School entry records for 1974 and 1975.

(c) Measurements of children carried out by the investigator in 1975.[3]

4. Dominica

1976 Anthropometric Survey carried out on a sample of the pre-school population.

5. Grenada

100% sample of children attending six of the twenty-eight centres where Child Health Clinics are held.[4]

6. Guyana

Results of the 1971 National Nutrition Survey.[5]

7. Jamaica

Results of a Rapid Anthropometric Survey.[6]

8. Montserrat

100% sample of Child Health Clinic record cards of children attending during 1975.[7]

9. St. Kitts

20% systematic random sample of children attending Child Health Clinics during the first ten months of 1976.[8]

Nevis

20% systematic random sample of children attending Child Health Clinics during the first few months of 1976.[8]

Anguilla

100% sample of Child Health Clinic records of children attending from April 1976 to March 1977.[9]

10. St. Lucia

Results of the 1974 National Nutrition Survey.[10]

11. St. Vincent

100% sample of Child Health Clinic attendants to twenty-one out of twenty-nine centres for 1975 and 1976.[11]

12. Trinidad

Results of the 1976 Anthropometric Survey carried out on a sample of the total pre-school population.[12]

Standards Used

The standard weight for age used is that known as the "Harvard" or "Boston" Standard.[13] (Sometimes referred to as the "Stuart and Stevenson Standard")

The nutritional status has been classified according to the Gomez Classification.[14]

Gomez Classification of the Nutritional Status -

"Normal" - Weight for age 90% of the Standard or above.

Mild Malnutrition (1st Degree Malnutrition) - Weight for age between 75 and 89% of the Standard.

Moderate Malnutrition (2nd Degree Malnutrition) - Weight for age between 60 and 74% of the Standard.

Severe Malnutrition (3rd Degree Malnutrition) - Weight for age below 60% of the Standard.

Results and Comments

Table 1 shows the overall results combining the available data.

This table is not presented in this way with the intention of comparing the data available in different territories. Comparisons among territories are always difficult and moreso when the sources of data are as varied as those presented here.

Table 1: Nutritional Status of the Children in Several Caribbean Territories by Weight for Age

Country	Normal		Mild Malnutrition		Moderate Malnutrition		Severe Malnutrition		Total
	No.	%	No.	%	No.	%	No.	%	
Antigua	303	56.9	189	35.5	36	6.8	4	0.75	535
Barbados	2,208	60.5	1,317	36.1	115	3.1	10	0.3	3,650
Cayman Islands	450	83.8	76	14.1	11	2.0	-	-	537
Dominica	196	49.5	153	38.6	41	10.3	7	1.8	396
Grenada	664	60.3	321	29.1	99	9.0	18	1.6	1,102
Guyana	379	39.3	415	43.0	154	16.0	16	1.7	964
Jamaica	246	50.2	191	39.0	46	9.4	7	1.4	490
Montserrat	999	77.7	255	19.8	28	2.3	3	0.2	1,258
St. Kitts	394	59.3	222	33.4	46	6.9	2	0.3	664
- Nevis	155	64.0	72	29.8	14	5.9	1	0.4	242
- Anguilla	410	72.4	131	23.1	25	4.4	-	-	566
St. Lucia	210	56.5	122	32.8	33	8.9	7	1.9	372
St. Vincent	1,591	69.5	519	22.7	143	6.2	37	1.6	2,296
Trinidad & Tobago	804	50.7	583	36.8	176	11.1	22	1.4	1,585

In the first instance, while the data from Barbados, Dominica, Guyana, Jamaica, St. Lucia and Trinidad & Tobago are the results of proper population samples and therefore can be considered as fairly representative of the totality of children, the data from the other territories are the results of the Child Health Clinic attendance and in this case two things have to be kept in mind:

(a) Experience has shown that the highest prevalence of malnutrition is found among children who do not attend clinics. Whenever data from clinics and surveys have been possible to compare (such as in the case of St. Lucia, Table 2) the discrepancy has been confirmed.[15]

(b) Clinic attendance varies tremendously among the different territories - from about 83% in St. Kitts-Nevis-Anguilla to perhaps 25% in Grenada and probably a similar percentage in St. Vincent. Furthermore, within different territories there are variations between different age groups so that attendance during the first year of life when immunization is offered at the clinics is considerably higher than over the age of three years, when most centres have nothing to offer but advice which, in the view of most mothers, does not justify the long walk to the Health Centres.

Keeping those two constraints in mind we can postulate that the percentage of children showing a deficit of weight for age (and therefore being labelled as "malnourished" according to this parameter) varies from about 25% to 50% in the different territories, and the percentage of children suffering from moderate and severe malnutrition is, on the average, in the order of 10% of the population in the 0 to 4 years age group. Estimating the population of the Caribbean as five million, 15% of whom are in the pre-school age group, we can assume that approximately 75,000 children throughout the Region are moderately or severely malnourished and should be receiving attention. The remaining children who are only moderately malnourished probably do not need "immediate" attention but by no means should they be forgotten.

Table 2: Nutritional status of children attending clinics compared with those in a representative sample of the population (St. Lucia, 1974).

	Clinic Attendants		Population Sample	
	No.	%	No.	%
Normal	3,735	70.7	210	56.5
Malnutrition I	1,238	23.4	122	32.8
Malnutrition II	272	5.1	33	8.9
Malnutrition III	41	0.8	7	1.9
Total:	5,285	100.1	372	100.1

II. BIRTH WEIGHTS

Sources of Data

1. Antigua

   30% systematic random sample of children born at Holberton Hospital and at home (delivered by a midwife) during the period January 1974 to September 1975.[1]

2. Barbados

   Data from the National Nutrition Centre, 1975.[3]

3. Cayman Islands

   Children born at Georgetown General Hospital during the period January 1973 to June 1975.[3]

4. Dominica

   33% sample of children born at Roseau Hospital during 1976.

5. Grenada

   20% systematic random sample of all children born in St. George's General Hospital and Princess Alice Hospital during 1974 and 1975.[5]

6. Montserrat

   Children born at Glendon Hospital and at home (delivered by a midwife) during the period October 1975 to September 1976.[7]

7. St. Kitts

   Children born at Joseph N. France and Sandy Point Hospitals (St. Kitts) January to December 1975.[8]

   Nevis

   Children born at Alexandra Hospital during the period January to December 1975.[8]

   Anguilla

   Children born at Cottage Hospital during the period April 1976 to March 1977.[9]

8. St. Lucia

   20% systematic random sample of all children born at Victoria General Hospital from January 1975 to April 1976.[15]

9. St. Vincent

   20% systematic random sample of all children born at Kingstown General Hospital during 1976.[11]

Results and Comments

The average birth weights are shown in Table 3 while the percentage of children weighing at birth 2,500 gms. or less (the limit for "immaturity") is presented in Table 4.

Table 5 shows the percentage of children born with the "most favourable birth weight".

Table 6 shows the birth weights according to percentiles.

The birth weight is an extremely valuable indicator of the nutritional status of two very important segments of the population - children and pregnant women. In addition, the birth weight is an indicator "from scratch" of the chances of the child surviving the first year of life, and its future physical and mental development.

Table 3: Average weight at birth

Country	BIRTH WEIGHT IN GMS.		
	Boys	Girls	Both Sexes
Antigua	3,128	3,066	3,099
Cayman Islands	3,434	3,261	3,344
Dominica	3,100	3,071	3,087
Grenada	3,033	2,976	3,006
Montserrat	3,120	3,070	3,093
St. Kitts-Nevis	3,107	2,947	3,028
- Anguilla	3,176	3,025	3,085
St. Lucia	3,241	3,037	3,141
St. Vincent	3,144	2,976	3,060

Table 4: "Immaturity" (≤ 2,500 gms.)

Country	No. of Cases	Percentage of the Births Recorded
Antigua	46	13.2
Barbados	565	19.0
Cayman Islands	52	7.9
Dominica	32	10.1
Grenada	106	12.2
Montserrat	27	17.9
St. Kitts-Nevis	120	13.4
- Anguilla	16	10.2
St. Lucia	41	9.3
St. Vincent	37	10.4

Table 5: "Most Favourable" Birth Weight (3,501 - 4,000 gms.)

Country	No. of Cases	Percentage of the Births Recorded
Antigua	66	19.0
Cayman Islands	185	28.0
Dominica	51	16.0
Grenada	138	15.8
Montserrat	27	17.9
St. Kitts-Nevis	111	12.4
- Anguilla	31	20.0
St. Lucia	92	20.8
St. Vincent	49	13.7

Table 6: Percentiles of Weights at Birth (in kgms.)

	BOYS					GIRLS				
	10th	25th	50th	75th	90th	10th	25th	50th	75th	90th
Harvard Reference Standard	2.83	3.13	3.4	3.76	4.13	2.81	3.13	3.36	3.67	3.9
Dominica	2.54	2.85	3.09	3.51	3.66	2.47	2.75	3.0	3.37	3.76
Grenada	2.52	2.78	3.09	3.4	3.7	2.41	2.69	3.0	3.32	3.57
Montserrat	2.27	2.72	3.18	3.52	3.74	2.3	2.67	3.02	3.41	3.63
St. Kitts-Nevis-	2.47	2.8	3.12	3.41	3.72	2.38	2.7	2.95	3.27	3.52
- Anguilla	2.5	3.0	3.26	3.63	3.92	2.5	2.72	3.19	3.4	3.63
St. Lucia	2.59	2.91	3.29	3.59	3.81	2.41	2.81	3.06	3.36	3.67
St. Vincent	2.58	2.78	3.09	3.26	3.51	2.38	2.69	2.92	3.32	3.63

There are several factors which influence the size of the child at birth but the most important ones are the age of the mother, the number of pregnancies and her nutritional status.[16] The data presented here indicate that the average birth weight of the children is low compared with the Standard. The median or 50th percentile corresponds or is even below in some cases to the 25th percentile of the Stuart and Stevenson Standard. The percentage of "immaturity" is comparatively high, while the percentage of children born with the "most favourable" birth weight (when the infant mortality is lower) is comparatively small.[16]

III. HOSPITAL ADMISSIONS

Sources of Data

1. Antigua

Holberton Hospital records for the period December 1974 to November 1975.[1]

2. Cayman Islands

   Georgetown Hospital records for the years 1973 and 1974.[2]

3. Grenada

   St. George's General Hospital records for the years 1974 and 1975.[4]

4. Jamaica

   Data from the University Hospital published by Ashworth and Waterlow for the year 1968 (only children under 2 years).[17]

5. Montserrat

   Glendon Hospital reccords for the years 1972 through 1975.[7]

6. St. Kitts-Nevis

   Hospital Admission Records from Joseph N. France and Sandy Point Hospitals (St. Kitts) and Alexandra Hospital (Nevis) for the year 1975.[8]

7. St. Lucia

   Victoria Hospital Admission Records for the year 1975.[15]

8. St. Vincent

   Hospital Admission Records at Kingstown General Hospital and Georgetown Hospital for 1976.[11]

Results and Comments

Table 7 shows the percentage of children admitted to hospital with gastroenteritis and malnutrition.

The close association between gastroenteritis and malnutrition has been recognised for a long time,[18] and very often whether a child is diagnosed of gastroenteritis or malnutrition depends on the particular prefer-

ence of the doctors. Nutritionists, in general, tend to consider both conditions together for practical purposes and the Ministers of Health of the Caribbean have adopted a combined strategy to combat both conditions.[19] Even so, one has to be cautious in interpreting the admission figures particularly when we consider that even the definition of gastroenteritis is rather "loose" (diarrhoea with or without vomiting).[19]

In addition, children up to the age of 12 years are considered as paediatric admissions particularly when gastroenteritis and malnutrition affect children under 2 years.

Keeping all these factors in mind one can assume that the admission to hospital for gastroenteritis and malnutrition represents "probably" about 20% of all paediatric admissions.

Table 7: Hospital Paediatric Admissions

Country	Malnutrition		Gastroenteritis		Malnutrition & Gastroenteritis		Other		Total
	No.	%	No.	%	No.	%	No.	%	
Antigua[1]	25	5.8	40	9.3	20	4.6	346	80.3	431
Cayman Islands[2]	17	6.4	57	21.3	-	-	193	72.3	267
Grenada[3]	91	6.0	207	13.6	9	0.6	1,213	79.8	1,520
Jamaica[4]	-	24.0	-	30.0	-	-	-	-	-
Montserrat[5]	54	6.3	62	7.2	-	-	742	86.5	858
St. Kitts-Nevis[6]	32	3.3	156	16.3	12	1.2	760	79.2	960
St. Lucia[7]	53	4.6	98	8.6	14	1.2	976	85.5	1,141
St. Vincent[8]	140	16.2	181	20.9	-	-	545	62.9	866

[1]December 1974 to November 1975
[2]1973 and 1974
[3]1974 and 1975
[4]1967-1968: only children 2 years
[5]1972 through 1975
[6]1975: only cases under 5 years
[7]1975
[8]1976

APPENDIX

SELECTED VITAL STATISTICS

Country	POPULATION		BIRTH RATE	MORTALITY RATES	
	Total	<5 yrs.	(per 1,000 pop)	I.M.R. (x 1,000 births)	1-4 years (x 1,000 pop at risk)
Anguilla (1976)	5,519	871	27.5	44.7	2.9
Antigua (1972)	73,000	10,715	21.5	19.1	0.4
Barbados (1975)	243,800	26,670	19.2	29.1	1.1 (1973)
Cayman Isl. (1974)	13,013	1,400*	21.6	17.8	0.9*
Grenada (1975)	107,779	14,400*	27.4	23.5	1.9
Guyana (1970)	718,000	123,560	35.5		
Jamaica (1973)	1,980,000	300,304	34.6	26.2	
Montserrat (1975)	13,292	1,000*	16.0	42.2	
St. Lucia (1974)	111,800	19,500*	36.3	30.4	
St. Kitts-Nevis (1974)	47,400	6,970	24.1	57.7	2.0
St. Vincent (1974)	97,500	16,263	34.6	63.4	4.6
Trinidad & Tobago (1974)	1,066,950	123,650	24.5	25.6	1.6

*Estimated

REFERENCES

1. Gueri, M. "Nutritional Status of Young Children in Antigua". Mimeograph Document CFNI-T-121-75.

2. "Food and Nutrition Planning: Basic Data on Barbados". Mimeograph Document CFNI-T-58-76.

3. Gueri, M. "Nutritional Status in Cayman Islands". Mimeograph Document CFNI-T-97-75.

4. Gueri, M. "Nutritional Status of Young Children in Grenada". Mimeograph Document CFNI-T-36-76.

5. "The National Food and Nutrition Survey of Guyana". *PAHO Sc. Pub.*, 323, 1976.

6. Gurney, J.M., Fox, H., Neill, J. "A Rapid Survey to Assess the Nutrition of Jamaican Infants and Young Children in 1970". *Trans. Roy. Soc. Trop. Med. Hyg.*, 66: 653-662, 1972.

7. Gueri, M. "Nutritional Status of Young Children in Montserrat". Mimeograph Document CFNI-T-60-76.

8. Gueri, M., Morgan, M. "Nutritional Status of Young Children in St. Kitts-Nevis". Mimeograph Document CFNI-T-64-76.

9. Gueri, M. "Nutritional Status of Young Children in Anguilla" (Preliminary Report). Mimeograph Document CFNI-T-21-77.

10. Government of St. Lucia. "The National Food and Nutrition Survey of St. Lucia". Published by the Caribbean Food and Nutrition Institute, U.W.I., Kingston, Jamaica, 1976.

11. Witter, C., Allen, B., Gueri, M. "Nutritional Status of Young Children in St. Vincent". Mimeograph Document CFNI-T-12-77.

12. "Assessment of the Nutritional Status of Young Children in Trinidad and Tobago". Mimeograph Document CFNI-T-47-76.

13. Nelson, W.E., Vaughan, V.C., McKay, R.J. (eds.) "Textbook of Paediatrics". W.B. Saunders and Co., Philadelphia, 1969.

14. Gomez, F., Galvan, R.R., Frenk, S., Chavez, R., Vasquez, J. "Mortality in Second and Third Degree Malnutrition". *J. Trop. Paediat.*, 2: 77-83, 1956.

15. Gueri, M. "Nutritional Status of Young Children in St Lucia". Mimeograph Document CFNI-T-46-76.

16. Puffer, R.R., Serrano, C.V. "Birth Weight, Maternal Age and Birth Order: Three Important Determinants in Infant Mortality". *PAHO Sc. Pub.*, 294, 1975.

17. Ashworth, A., Waterlow, J.C. "Nutrition in Jamaica 1969-70". Published by the Extra-Mural Department, U.W.I., Jamaica.

18. Miall, W.E., Desai, P., Standard, K.L. "Malnutrition and Child Growth in Jamaica". *J. Biosoc. Sc.*, 2: 31-44, 1970.

19. "Strategy and Plan of Action to Combat Gastroenteritis and Malnutrition in Children Under Two Years". *J. Trop. Paediat.*, 21: 23-37, 1975.

IGUANA ANYONE?

Is anyone in the food industry looking into the idea of raising reptiles for human food? In May Organic Gardening the Iguana is nominated since this animal is already a traditional food for a number of Mexican and Central American Indians. It may be easier to overcome the reluctance to eat reptile meat if it is known to be eaten routinely in other healthy cultures.

We already have horticulture, agriculture, aquaculture and other kinds of culture. What would you call the raising of cold blooded animals for food? How about herpiculture?

There is certainly merit to the idea for semi-arid areas. Most reptiles do not need much water and they can go long periods without starving. Of course they do not gain weight without food but they do not waste a lot of energy maintaining an elevated body temperature. What do you feed reptiles for maximum growth rate and feed efficiency? There seems to be only qualitative information. Cold blooded animals have the potential for growth of useful protein foods in an energy efficient manner.

- Food, Nutrition and Health (Newsletter) April 1977

Editor's Note: The Iguana is also considered a delicacy in certain parts of the Caribbean. Do any of our readers have any recipes?

THE SOCIAL ASPECTS OF FOOD PROMOTION*

by

B. Andrea Okwesa

A thoughtful radio listener or television viewer will observe, after being exposed to a number of advertisements for foods and food supplements, that much of what the public needs to know about food and nutrition is against the advertisers' interest to tell. This, the advertiser will argue, is not his role. His role is to stimulate consumer demand for, and secure regular usage of a product by conveying information in a persuasive manner. This is promotion, and the objective of such communication is profit maximization. It is, therefore, generally a purely commercial enterprise.

In the Caribbean Region, degenerative diseases associated with the over-consumption of dietary energy, salt, refined carbohydrate and saturated fat, such as obesity, diabetes and hypertension, are becoming more widespread. Yet food products containing such dietary items are heavily promoted by advertisers to the detriment of natural, home-grown or home-made foods, although the current trend towards self-sufficiency in food production involves stimulating interest in locally-grown products rather than imported foods, most of which are processed. This trend occurs largely because of the impact of advertising media upon a population which is becoming more aware of, and receptive to, mass media messages. The public is bombarded with a whole range of food product advertisements which are calculated to induce the consumer to purchase the product on the basis of the specific information it gives,

---

*Based on an address delivered at a Seminar sponsored by Abbott W.I. Ltd. on 24 June 1977. Andrea Okwesa is Media Officer/Editor at CFNI.

which is not generally in accordance with nutritional objectives. The public is told, for example, in a jingle put to a catchy popular rhythm, that sugary beverages are delicious, or cooling or "the real thing", but the commercial avoids any mention of the fact, (which would be substantiated by nutritionists) that excessive consumption of sweet drinks could cause tooth decay or create a taste-preference for sweets, leading to obesity.

The consumer is also not told that amounts of nutrients in excess of actual needs will not result in superior performance by the individual, either mental or physical. The promotion of patent tonics and other food supplements is a case in point. Almost never is the consumer informed through the advertisements, of natural food sources of the nutrients which the tonic professes to have. The inference somehow, is that chemical nutrients are better than natural ones, or that people need to take tonics for better health and vitality, even when they eat a balanced diet.

The emphasis on vitamins and minerals in most food and food supplement advertising would seem to suggest that a dificiency of these nutrients is responsible for the majority of nutrition-related disorders. But in the Caribbean, for example, deficiencies of what the advertisers term the "important" vitamins and minerals, in fact represent a very minor proportion of nutrition-related illnesses, or are confined to certain population groups. Iron deficiency anaemia, one of the major nutritional-deficiency diseases in the Region, is less common among the adult male population, being particularly prevalent among women of child-bearing age and pre-school children up to the age of five. Throughout the Caribbean however, protein-energy malnutrition continues to be the gravest nutritional problem. Although the chief targets of anaemia are children from 2-5 years and pregnant and lactating women, a shortfall in both energy and protein requirements is reflected in the diets of the many households in the lower socio-economic groups.

Iron, however, is one of the most popular minerals in our food supplement advertisers' repertoire and its promotion has given rise to a whole series of misconceptions which have no nutritional basis whatsoever. Its use has been linked variously, with strength, sexual prowess and superior athletic performance and curiously enough, rarely do advertisements for iron supplements go into details about the nutritive value of iron in the diet. Furthermore, few advertisements would suggest to the potential consumer of the product that the problem of iron deficiency could be solved by promoting the consumption of iron-rich diets which should include a wide range of locally-available dark-green leafy vegetables. Such information would be fully in line with nutritional teachings; forthright, honest and reliable in its claims, and making no attempt to mislead the potential consumer. An advertisement which gives this type of nutrition information about iron would reinforce the viewpoint that, while iron supplements are appropriate and necessary in certain quite specific contexts such as pregnancy, dietary treatment of the disease (including food fortification) is infinitely preferable, and eliminates the need for costly supplements among the most vulnerable and neediest groups.

But the usual advertising policy is to blatantly subject the consumer to nutritional misinformation, thereby militating effectively against any development in nutritional awareness and rational decision-making on the part of the consumer. The consumer is confronted with a bewildering array of tonics and other food supplements which, through their skillfully worded messages confuse and ultimately trap him into making unwise purchase decisions.

Many advertisements also, invariably, give only the manufacturer's side of the story, and this is why some nutritionists tend to think that the real problem with food product advertisements is not so much their inaccuracy or vagueness, but their incompleteness. For unless people are given all relevant informa-

tion on which to make a decision, unless they can examine the information from both sides, any decision at which they arrive cannot be valid. But to include in an advertisement the kind of factual information which a nutritionist might consider relevant and complete in order to enable the consumer to purchase food products intelligently, would be to an advertiser totally suicidal.

Food and nutrition policies need to emphasize the safety of foods and the protection of the consumer against health hazards, commercial fraud and nutritional misinformation.

Some advertisements for food products are also potentially harmful, not only because they do not tell the whole truth or give misleading and inaccurate information, but also because of their effect on the society to which they are addressed. For a product to imply that it will counteract signs of ageing, reduce weight, or enable superior athletic performance is to create a pattern of unrealistic expectations in the minds of potential consumers. This can have undesirable social effects, particularly among the less

affluent groups where adverse social and economic circumstances prevail. The promotion of commercial infant formulas among disadvantaged population groups in developing countries for instance, has been shown to contribute to a serious decline in the highly desirable practise of breast-feeding, and to be associated with the spread of illnesses such as gastroenteritis and malnutrition. Also, the fondness for sweet foods which many young children exhibit, coupled with a tendency to obesity from a very early age, has been linked to the regular usage by mothers, of commercial infant food preparations which contain a high proportion of modified starch and sugar. These mothers are victims of an advertising policy which not only neglects to tell the whole truth, but by implication or suggestion causes her to lose confidence in the validity of natural products - her own breast milk and foods from her backyard garden - in favour of commercial substitutes.

If food promotion is applied to nutritional objectives and undertaken responsibly, it can be a potential powerful tool in the fight against malnutrition. We need to be especially vigilant about the social side effects of product promotion in developing countries such as ours. Irresponsibly carried out it can seriously aggravate the malnutrition problem and have serious implications for socio-economic development.

Social promotion of food involves "selling" food products to specified target groups to bring about nutritional improvement within those groups. Such a promotional enterprise must look beyond sales or profits for an assessment of its real value, which must instead be determined in terms of social benefit.

If the goal of such a promotional programme is improved nutritional status, this will affect the strategies and techniques employed from the immediate outset. The entire food chain should be involved constructively in the solution of the nutritional problems of the society to which the product is geared. Nutritional

information should be included in employee training to extend awareness and adoption of this approach among all members of the industry and positively affect the employees' view of a production process which is directed towards social rather than strictly commercial ends.

Another factor in social promotion is the systematic analysis of potential consumers. This involves assessing the precise nutritional status of the group, their consumer and purchasing behaviour, priority nutritional targets and the ways and means by which a food product or supplement can be produced and marketed honestly, effectively and efficiently. Research should also be undertaken to establish whether, in some situations, promotion of the product may bring about undesirable nutritional or social side-effects and whether purchase of the product by the target-group will impose any limitations on income and domestic expenditure. Data on food attitudes, habits and expenditures from Food Consumption Surveys, on dietary requirements from Recommended Dietary Allowances and on the multitude of socio-cultural, economic and traditional factors which can and do influence food attitudes and habits, must be carefully studied. Such information is a vital prerequisite for successful product development and promotion and will also greatly influence the content of the advertising message the media employed and the message's impact on potential consumers. Target population groups are often the recipients of contradictory advice which can result in confusion and reduced promotional impact. Knowledge of the community and the use of different forms of mass media including unconventional channels such as the traditional midwife, will ensure that the desired recipients of the message receive it in a manner and through a medium to which they can respond. Social promotion will, therefore, also eliminate the common tendency in the conduct of food promotion to be predisposed towards mass media, neglecting the personal or community channels for consumer contact.

The designing of appropriate messages by advertisers of the product should be carried out in close collaboration with nutritionists and dietitians, health teams at clinics, MCH centres and out-patients' departments, as well as responsible members of the community who will be recipients of this information. An important factor also, is that the needs of illiterate as well as literate people should be considered when designing advertising messages and labels for food products, and promotional literature should aim to foster sound nutritional practices among all levels of society.

In the manufacture and promotion of food supplements, the critical point to be stressed is that if people cannot afford an adequate diet they cannot or should not afford supplements. Hence, new ventures for the production of food supplements should only be stimulated in the interests of providing nutritious supplements for the most nutritionally at-risk segments of the population.

There is also a need for more meaningful and well-reasoned dialogue on how to implement and enact appropriate food promotion policies and legislation, particularly in developing countries, in order to avoid dangerous social and nutritional side effects and afford the consumer some degree of protection. The establishment and legal enforcement of standards governing the quality and nutritive value of both foods and food supplements should be undertaken by government, in line with recommendations from bodies comprising nutritionists, dietitians, food technologists, medical personnel, representatives of the food manufacturing industry and advertisers.

Such co-ordinated and co-operative effort is required in the effective production, marketing, distribution, promotion, acceptance and proper usage of food products and supplements, in harmony with the needs and welfare of the target group and with the national food and nutrition policy. ▲

NEWSPAPER CLIPPINGS

NEW FOOD, DRUG LAWS IN GUYANA

From the Sunday Gleaner, Jamaica, 18 September 1977

The Guyana Ministry of Health has introduced new food and drug laws, the aim of which is to maintain high standards.

The Minister of Labour, Health and Housing, declared that the new regulations which will come into force from November 1 this year, will do away with brand name drugs. They were not intended to restrict production however, but to encourage manufacturers to produce food, drugs and cosmetics of a very high standard.

The regulations will be the most up-to-date in the Region, the Minister asserted, and will also discourage exploitation of the public. He disclosed that they were about seven years overdue, but from time to time they may have to be modified and legal action will be taken against those proprietors who do not conform to their authority.

The regulations will help the Government also to control certain imported goods in relation to brand names and only those products that conform to the regulations will be allowed entry in the country.

The Minister also gave the assurance that work is continuing on the setting up of a Bureau of Standards. ▲

BUREAU MEETS PROCESSED FOODS DISTRIBUTORS

From The Daily Gleaner, Jamaica, 21 July 1977

The need for proper streamlining of the system of certification for processed foods was discussed at a recent meeting between the food department of the Jamaican Bureau of Standards and distributors and exporters of processed foods. At the meeting, which was called to discuss the system of certification for processed foods,

the distributors disclosed that, prior to the meeting, they were unaware of the requirements of the Processed Foods Act regarding the certification of goods.

Under the Act, all prescribed processed foods offered for sale either on the local or export market, must be certified by the Bureau. However, in the past, this has been hindered by the absence of proper coding, the mixing of different codes of products in the same carton, and poor record-keeping by manufacturers and distributors. Other factors were reluctance by some distributors to offer for re-sampling products which have been in warehouses for more than six months. Poor warehousing practices were also cited.

Distributors have been urged to assist the Bureau in streamlining the system of certification for processed foods, by ensuring that products they received were properly coded and certified. Failure to do so could result in uncertified and possibly poor quality products reaching the market, which could seriously damage the reputation of the country as well as individual firms. ▲

GUYANA ATTAINING SELF-SUFFICIENCY

From The Daily Gleaner, Jamaica, 24 July 1977

Guyana's commitment to feed herself, made in 1974, has been fully justified, in that a certain level of self-sufficiency has been achieved. The country can now survive on a diet consisting solely of locally-produced foodstuffs. Since setting the goal to feed the nation, the Prime Minister has been urging farmers to extend their cultivations on a planned scale and the response has been so widespread and successful that several farming co-operatives have been formed and have joined in the food drive.

For the past three and a half years, Guyana has been growing on a large scale, such crops as corn, peanuts, pumpkins, soyabeans, fruits and mixed vegetables. However, while producing crops for human consumption, the country has been doing the same for stock-feed with a significant increase in livestock development.

Added to the food drive, Guyana is taking positive action towards nutrition planning for the whole nation. The objectives of the National Food and Nutrition Policy are four-fold. They are:

1. To increase the production of nutritious foods to meet the nutritional requirements of the Guyanese people.
2. To ensure that all segments of the population are adequately nourished.
3. To reduce the prevalence of protein-calorie malnutrition in children under five years.
4. To improve or develop organization and management facilities and procedures to ensure agricultural development.

Guyana's achievement in being able to feed herself is a commitment and challenge to the Region to achieve nutritional self-sufficiency. ▲

HIGH STANDARD IN FOOD PRODUCTION NEEDED

From The Daily Gleaner, Jamaica, 22 July 1977

St. Kitts-Nevis Minister of Agriculture has emphasised the need for high standards in the production of foods.

"It has become clear to all of us that the quality of the food we produce is as important and in some cases more important than the quantity", he told the opening of a ten-day workshop on Food Economics and Food and Nutrition Policy in the State.

The Jamaica-based Caribbean Food and Nutrition Institute (CFNI) was praised for its part in helping bring home the need for quality in food production. He said the new awareness resulted from the pressures, demands, organization and sheer intellectual force of the Institute. ▲

OYSTER INDUSTRY PLANNED

From The Daily Gleaner, Jamaica, 6 August 1977

A pilot project aimed at creating a new food industry in Jamaica was started recently. On 1 July a new Oyster culture project was launched at the University of the West Indies Port Royal Marine Laboratory which, if successful, will bring into being a brand new food industry for Jamaica.

The project is being sponsored by the International Development Research Centre (IDRC) of Canada, the University of the West Indies and the Government of Jamaica. The total overseas funding will be J$227,000, made available by Canada. A matching contribution will be provided by the University and the Government in salaries and services.

This project aims at determining by pilot scale experiments the feasibility of developing commercial oysterculture experiments in Jamaica while at the same time paying particular attention to the priority needs of rural communities for village-type industries. Methods of oysterculture which could be easily implemented at several places around the coast of Jamaica will be developed and tested so as to form the basis for widespread rural employment and food production.

The species of oyster currently being found in Cuba, the common mangrove oyster, is similar to that found here. Montego Bay harbour and the Bogue Sands, Portland Bight, Negril and Ocho Rios

have been screened off for the pilot project, they being rich in mangrove branches and bamboo sticks.

The project aims at using only natural populations of oysters and will concentrate on utilizing materials that are easily available locally and easily accessible, such as discarded motor car tyres.

The end product of the operation will be oyster meat packaged ready for sale for making soup, stew, and fried preparations, while at the same time satisfying the gourmet and restaurant demands. Jamaica needs food that can feed its entire population and therefore the hope, also, is to demonstrate that the culture of local oysters can satisfy this need for a highly nutritious, easily available and inexpensive product.

In line with this development, a major study is to be undertaken later this year to exploit sea fish such as Goggle-eye Jacks and Bonitos along the Jamaican coastline. The study is also to be undertaken by the U.W.I. Marine Laboratory and follows a similar study on "The Potential for Reef Fishery Development", which has now been completed. ▲

HEALTH FORECAST FOR RICE - SELF-SUFFICIENCY QUITE POSSIBLE

From The Jamaica Daily News, 2 August 1977

The (Jamaican) Agricultural Marketing Corporation (AMC) is to purchase from the Agricultural Development Corporation (ADC), and market the local rice crop which is expected to be some 4,000 tons this year.

But the AMC Chairman is far more optimistic for the future, because he pointed out there are about 20,000 acres of land in Jamaica suitable for rice cultivation, and even at a low yield of 2½ tons to the acre this would give a production of 50,000 tons a

crop - putting Jamaica on the road to national self-sufficiency.

The Jamaica Railway Corporation will play a significant part in the present contract arrangements. Two purchasing centres are being set up to serve growers in the Western areas of the island, one at the Magotty railway station in St. Elizabeth and the other at Anchovy Station in St. James.

The CICA-9 variety, which is very adaptable to Jamaican conditions, is high-yielding, shows resistance to traditional rice diseases and is suitable for both shallow and deep water submergence.

The rice purchased at these stations will be transported by rail to the ADC's rice mill in Spanish Town. Farmers in St. Catherine and Clarendon can sell their rice to the ADC's mill in bulk.

Rice of the required moisture content will be bought at J 14¢ a pound for the Cica 4 and 9 varieties and at J 12¢ a pound for the red variety, which farmers are not being encouraged to grow.

When the rice is processed it will be packaged under the AMC's brand and marketed through the Corporation's retail stores and special shops.

He said that the by-products from the milling operations will be sold to animal feed manufacturers. ▲

BREAKFAST FEEDING PROGRAMME INSTITUTED

From the Jamaica Daily News, 18 August 1977

Schoolchildren who do not get a nutritionally adequate breakfast may be less alert, their ability to concentrate may be impaired and their skills are apt to tail off late in the morning.

In 1973 the Jamaican Government, through the Ministry of Education, started the School-feeding Programme which supplied lunches of milk and patties to 77 basic, primary and all-age schools and day-care centres in the Corporate Area.

Some schools have started their own breakfast feeding programmes. Most of these are rural schools, although St. Anne's Secondary School on Oxford Street has started one. Their only problem is the funds to keep it going.

St. Anne's isn't the only school which feels that a breakfast feeding programme is necessary. Rusea's High School in Hanover, the Bog Walk Secondary School and some schools in St. Mary feel that a breakfast programme is essential to the learning process.

Governments should review within the context of food and nutrition planning, special feeding programmes particularly among the vulnerable groups including schoolchildren and preschool children.

At Rusea's it was noticed that students were particularly unruly during the morning session of classes. After looking into this, it was found that most of the students had to come from far-off places and in order to get to school early quite a few of them left home without breakfast. After the breakfast programme was instituted most of the students' restlessness ceased and classes were able to go on in a more orderly fashion.

The Government's School Feeding Programme and the efforts of some schools to provide breakfast for their students is one step toward nationwide nutritional stability. ▲

A RECIPE FROM AFRICA

Groundnuts are particularly effective in the rehabilitation of malnourished children. The preparation is as follows:

- *Thoroughly dry the peanuts.*
- *Remove all those which have traces of mould.*
- *Grill lightly in a frying pan or in an oven for 30 minutes, so as to dry out the peanuts completely and lightly roast them without burning.*
- *Grind the peanuts thoroughly to form a smooth paste. This is well tolerated and accepted by children of 4 months and upwards. For those aged 4-6 months, mix with equal quantity of mashed banana. For those above 6 months, make a ball (egg-sized) and let the child feed himself.*

- Dr. K.V. Bailey

"Manual on Public Health Nutrition"

WHO Regional Office for Africa, Brazzaville, 1975.

NEWS BRIEFS

CONSUMER PROTECTION DESK SET UP

The responsibility for most aspects of consumer safety in Guyana will now be assumed by the Consumer Protection Desk which has been established in the Ministry of Trade and Consumer Protection. There is already a Guyana Consumer's Association which deals with complaints from the public on matters relating to food and other commodities, and also broadcasts a radio series on consumer awareness. ▲

GUYANA FISHERIES PROJECT TO DEVELOP METHODS OF PROCESSING AND PRESERVATION

The continental shelf off Guyana is the centre of a large shrimp fishery that employs more than 500 modern shrimp trawlers. These trawlers also harvest large quantities of what are generally termed "trash fish", but which in fact include large numbers of edible species. Unfortunately most of this by-catch is simply jettisoned at sea. However, the Government of Guyana now requires that trawlers using the port of Georgetown land at least a part of the by-catch in order to increase the food supply for the people of the region.

Several Guyanese organizations are cooperating in a project financed by IDRC* that is classifying the various species in the by-catch to determine their nutritional and economic value. The

---

**International Development Research Centre is a public corporation, established by an Act of Canadian Parliament in 1970 to support research designed to adapt science and technology to the specific needs of developing countries.*

most important component of the project is to develop inexpensive methods of processing and preservation, including salting and smoking, and the production of acceptable minced-fish products. Attention is also given to more expensive fresh- and frozen-fish products for the export market and Caribbean tourist hotels, and work is going ahead to produce a variety of novel fish products - including fish sausages made from minced shark - to be used as nutritional supplements in local diets. ▲

NURSE PRACTITIONER PROGRAMME BEGUN

The Nurse Practitioner Programme - a one-year training course to prepare experienced registered nurses for greater clinical responsibilities - has been initiated in Jamaica at the Glen Vincent Clinic.

The programme, which involves initially 25 nurses, has been described as "one of the most dynamic moves taken towards solving the problems posed by the shortage of doctors in the country."

The nurses will be trained as nurse paediatricians and family nurse practitioners and their training will enable them to perform some of the preliminary work which is usually done by doctors, thus freeing the doctors to carry out more intensive medical functions.▲

"LOW-COST MEALS FOR HEALTH" COMPETITION LAUNCHED IN GUYANA

A competition, sponsored jointly by the Nutrition Association of Guyana and the Guyana Consumer's Association ran from 1 September - 15 October. Competitors were asked to submit recipes for a tasty, low-cost and nutritious main meal, sufficient to feed a family of six including three adults, two children aged ten and five years and a two-year old.

Extensively promoted via the news and broadcast media, the competition was designed to reinforce the message of self-sufficiency in food production and the importance of fostering proper attitudes to nutrition at the household level. ▲

CORN AND SOYA BEAN PROJECT IN OPERATION

The Corn/Soya Bean Project operated by the Governments of Guyana, Trinidad and Tobago and St. Kitts-Nevis-Anguilla has been launched. The project is expected to yield, by the third year of operation, 8.5 million pounds of corn, 608 million pounds of soya bean and 1 million pounds of blackeye peas. In Trinidad and Tobago, six hundred acres are under cultivation at Piarco and five hundred acres at Chaguaramas. The Chaguaramas Agricultural Project has tested soya bean successfully for inclusion in a variety of foodstuff including sausages, cakes, bread and pastry. Soya beans are also being sold to farmers at a subsidized price. ▲

SOYA PRODUCTS DEVELOPED AT TECHNICAL INSTITUTE

The John Donaldson Technical Institute in Trinidad and Tobago has been conducting tests on soya for home consumption. A number of products have been made and tested, including *soy nuts*, *chilibibi* (50% soya 50% corn, ground together with sugar added), *soy vanilla fudge*, *soy choc fudge*, *soybutter*, *soy ice cream*. In addition, *soy milk* has been extracted from the bean, and *soy peanut milk* (1 pint soy milk, 1 tbsp. peanut butter) and *soy choc milk* (1 pint soy milk, 2 tbsp. cocoa powder) have been tested. *Soy flour* using 12% soy has been made into bread, bakes, roti, buns, turnovers and accra*. *Soy sesame*, a confection similar to sesame balls which are popular in Tobago, has been produced, using 50% soy and 50% sesame seed. *Soy grits* have been used to formulate a baby porridge. ▲

MORE SUPPORT FOR DIABETICS IN TRINIDAD AND TOBAGO

The Diabetic Aid Society of Trinidad and Tobago has been formed by a group of concerned citizens in an effort to promote better care and health for diabetics. Other aims are to ensure that no scarcity occurs of essential medicines required by diabetics; to educate the public in general and diabetics in particular about the illness; to speak on behalf of diabetics whenever it becomes necessary and to promote research for the advancement of knowledge in diabetes and its complications. ▲

---

*A *deep-fried fritter made from a puree of ground beans and seasonings, originating in West Africa where it is known as akara.*

NUTRITION INFORMATION INCLUDED IN CHILD CARE PROGRAMME

SERVOL, a voluntary organization operating in the depressed areas of Laventille in Trinidad and Tobago, has been conducting a child care programme for low income families. Advice on food and nutrition are given to mothers by a nurse attached to the programme. In the near future a programme designed for pregnant women will be instituted. ▲

NUTRITION-RELATED DISORDERS STRESSED IN DRAFT NATIONAL NUTRITION PROGRAMME

The Trinidad and Tobago National Nutrition Council is formulating a draft national nutrition programme that can be utilized in a National Food and Nutrition Policy. Draft proposals highlight two problem areas:

(a) Children suffering from gastroenteritis, PCM and related diseases.

(b) Problems of diabetes, obesity, protein-energy deficiencies, vascular and coronary diseases.

The objectives of the programme will be accomplished through a nutrition communication programme, special nutritional rehabilitation programmes, increased food production and the utilization of more locally grown food, a comprehensive food distribution policy and a consumer education programme. ▲

FOCUS ON CFNI...

Miss Manuelita Zephirin, CFNI Public Health Nutritionist/ Dietitian attended the Western Hemisphere Nutrition Congress V which was held in Quebec City, Canada from 15 August to 18 August.

The third and final in the series of workshops on Food Economics and Food and Nutrition Policy organized by CFNI was held in St. Kitts from the 18-26 July 1977. During the workshop participants considered, in a Caribbean context, the general issues and methodology in Food and Nutrition Planning, and developed the outline of a model Food and Nutrition Plan for St. Kitts/Nevis/Anguilla.

Recent visitors to CFNI included Dr. A.H. Taba, Dr. A. Robertson and Dr. Reed Hertford.

Dr. A.H. Taba, Director of the WHO Office for the Eastern Mediterranean on Alexandria, Egypt, accompanied by Dr. A. Robertson, Public Health Administrator for Health Manpower Development in the WHO Eastern Mediterranean Regional Office, visited CFNI from 22-24 September. During his visit he held discussions with Jamaican Government officials in the Ministry of Health and Enviromental Control, the Head of the Department of Social and Preventive Medicine at the University of the West Indies and CFNI staff.

On 23 September, Dr. Reed Hertford of the Ford Foundation consulted with CFNI staff members on the Institute's activities and programme, particularly Food and Nutrition Policy. ▲

"The physician must know, and must be at great pains to know, what man is in relation to food and drink and habits generally and the relation of each to each individual."

- HIPPOCRATES 400BC
Quoted by Cicely Williams
In "Nutrition in the Community" McLaren, D.S. (ed)
London: Wiley, 1970.

BOOK REVIEWS

THE SCIENCE OF FOOD: AN INTRODUCTION TO FOOD SCIENCE, NUTRITION AND MICROBIOLOGY

P.M. Gaman and K.B. Sherington. Oxford, Pergamon Press, 1977, 300 p. Price: US$15.00 (clothbound), US$3.95 (paperback)

The authors designed this book primarily for National Diploma Students in Catering and Institutional Management also Home Economics Students and students from Institutions in the United Kingdom taking Diplomas in Food Science and Technology, Dietetics and Nutrition. Most of the information presented, and more particularly that on Food Legislation, Recommended Dietary Allowances and foods is pertinent to the United Kingdom and as such may not have a wide appeal in the Caribbean, but this book will be useful to teachers of food service courses or as a reference in advanced courses for Food Service Supervisors. It will also be of value as supplementary reading for these students.

The book comprises 3 main subject areas: Food Science, Nutrition and Microbiology and is organized into 16 chapters.

Chapter I, "Measurement and Metrication", describes the SI Metric System: (Système Internationale d'Unités) and the conversion of Imperial to Metric Units. This chapter is of particular relevance at this time when several Caribbean territories are adopting the Metric System and would be particularly helpful to Dietetic and Home Economics students.

The first section is concerned with an overview of basic chemistry as it relates to the study of food science and nutrition. Section 2 focuses on the nutrients and foods. Sources, functions, recommended intakes and losses due to cooking and storage are discussed. A very useful inclusion is the table outlining methods of minimizing vitamin C losses in fruits and vegetables.

Food composition, food values and the effects of cooking and processing of selected foods are discussed in a chapter entitled "Commodities".

The final section deals with microbiology and food hygiene. Types of micro-organisms that cause food spoilage, as well as other sources of contamination, are identified and described. The chapter on Food Poisoning and its prevention includes a useful section on "Personal Hygiene in the Kitchen" and the hygienic handling of food.

In the final chapter entitled "Food Spoilage and Food Preservation", emphasis is on methods of food preservation.

The two Appendices present the percentage contribution of different foods to the nutrient content of the average household diet in the United Kingdom and Recommended Dietary Intakes of Energy and Nutrients for the United Kingdom.

The full text of this book may not be entirely appropriate as a basic textbook for training programmes in Dietetic Technology and Food Service Supervision as currently taught in the Caribbean Region. However, it can be recommended for the reference libraries of Dietetic Technology and advanced Food Service Supervisors courses. Instructors of Introductory Food Science and Food Preparation Courses might like to have it on their reference shelf as a source of information on the care and handling of food and proper sanitation measures. It would also be useful as a supplementary reference for public health inspectors.

Manuelita Zephirin

BREAST-FEEDING AND THE MOTHER

Ciba Foundation Symposium 45 (New Series) Amsterdam, Elsevier. 1976. 280 p. Price: US$20.95 (clothbound); US$11.50 (paperback).

Anybody interested in the subject becomes a bit weary after a while of meetings, seminars and symposia on breast-feeding. There are so many of them that one wonders if a new one brings anything really new. This symposium brought together many well known figures in the field of breast-feeding. Although much of what was said and discussed at this symposium is really well known, the approach to the subject is slightly different, because it deals with the question of breast-feeding from the mother's point of view.

The papers presented at the symposium cover a wide variety of subjects, ranging from the ability of the lactating female rat to screen some external stimuli so that she becomes more sensitive to stimuli emitted by the pups (and yet, she has a diminished pituitary adrenal activity) to the long term results obtained when the "human" mother is put in direct contact (literally skin to skin) with her newborn for 45 minutes immediately after delivery.

The book is divided basically into two parts. The first one deals mainly with the physiology of lactation as it affects the mother including changes in pituitary and adrenal activity, hormonal control of lactation, the effect of prolactin and gonadotropic hormone on fertility, the effect of lactation on reproduction, the consequences of lactation on maternal cardiovascular and metabolic system and the nutritional implications of breast-feeding.

The second part of the book deals with the cultural and sociological aspects of breast-feeding. These include the new mother's view of herself; the feelings of shame, the anxiety associated with breast-feeding in most women: how in some cases the reasons can be traced to experiences (sometimes emotionally

traumatic) in early childhood; the cultural differences between breast-feeding practices; the midwife's role in preparing and supporting the mother; and how lactation education should be approached, ("Had we used the funds now spent for the promotion of baby foods, on the promotion of breast-feeding, I could guarantee you 100% breast-feeding in this country!"). The production manager of a baby food industry said those words off the record, and he should know! How long are we going to ignore the fact that lactation has to be "sold" to the public on the same competitive basis as milk formulas? Why have women stopped breast-feeding? This difficult subject is analysed with considerable detail with reference to community and socio-political considerations of breast-feeding. It is high time that nutritionists and health workers adopt a common policy on breast-feeding and actively promote its implementation.

We found the chapter on the effect of early mother-infant contact on breast-feeding, infection and growth extremely interesting and even emotionally touching: are we with our present practices depriving the newborns of an emotional experience that may have long lasting effects? Should we prolong for a few more minutes the close contact mother and child had for nine months by giving the child to the mother as it comes from the womb? Are we prepared to "drop" our hospital standards? or just "humanize" them?

Miguel Gueri ▲

"Some physiologists will have it that the stomach is a Mill - others that it is a Fermenting Vat - others again that it is a Stew-pan - but in my view it is neither a Mill, a Fermenting Vat, nor a Stew-pan - but a Stomach, Gentlemen, a Stomach."

- John Hunter (1728-1793)

DEVELOPMENT...BY WHAT MEANS?

"Improvements in the human condition which cannot be maintained under normal circumstances are hardly signs of development. Combating malnutrition may be a legitimate developmental concern, but enhanced nutritional status that is dependent on charity to maintain it is not development...At the very least, the reduction of deprivation has to be sustainable, and the ability to sustain it has to be indigenized by countries and regionally within countries. For nutrition interventions to be really developmental, therefore, other kinds of change - more traditional, productivity kinds of change - are necessary as well.

This means that we cannot allow nutrition programs to become just sop to poor people and regions. Nutrition programs must be a part - indeed an integral part - of a broader strategy of development. Isolated efforts may be better than none at all, but we should recognize that the results of such efforts are likely to be marginal."

- Kay Chernush

In "Changing attitudes for a better life"

War on Hunger, May 1977

Editor's Note: We at CFNI believe that for the process of development to be sustained and undertaken efficiently and effectively it is desirable that the kind of expertise required for the development process be built up in the individual countries.