

C A J A N U S

Newsletter of

THE CARIBBEAN FOOD AND NUTRITION INSTITUTE

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Reproduction of any of the original contributions is welcome. Articles herein that are copied from other publications always have some phrase of acknowledgment; we cannot authorize the reproduction of such articles. Reference to ourselves is not required, however it would be welcome, for instance, by the word CAJANUS at the end of an unsigned article.

EDITORIAL

This is the first issue of volume 7 of 'Cajanus'. We have decided to publish six times a year rather than quarterly as previously. 'Cajanus' started as a bi-monthly newsletter, but due to increased costs, we had to reduce the frequency of issues. We will try to keep each number to a reasonable size. We hope readers will like the change.

"Eating and living" by Professor G. Debry (page 8) discusses food in relation to its value, not to nutrient intake but to family and society. As Philip Wagner, a newspaper editor said:

"Food, as we see, is far more than calories, far more than fuel for the human engine. It is nourishment as well for the mind and the soul, entering into all our activities, all our thoughts, all our emotions, all our efforts to give style and meaning to what we do. What it is about man that has compelled him to elaborate the uses of food so endlessly, I have no idea. I must be content, with Plato and that latter-day platonist President de Gaulle, to try to "see the world as it is" - and let my scientific friends search for the explanations."

There is a piece by Dr. Antrobus on corrective measures for childhood malnutrition (page 12). This is highly topical in view of the recent technical group meeting in St. Vincent on malnutrition and gastro-enteritis (page 31).

Dr. Campbell has a note on the need for agreement on recommended dietary allowances for the Caribbean. See page 35 on which this very problem is brought up by Mrs. Sadie Campbell.

As we were going to press we received a report on food prices in Jamaica, Guyana and Barbados from staff and students at the Tropical Metabolism Research Unit of the University of the West Indies. As the information will be useful to readers in these countries but will, we fear, soon become overtaken by time we are publishing the report in this issue of 'Cajanus' (page 42)

THE EDITOR

¹Wagner, P. M. (1966). Food as Ritual in Food and Civilization - a symposium. Washington: 'Voice of America'.

TOPICS AND COMMENTS

DO WE NEED MORE VITAMIN E?

From The Food and Nutrition Board, USA.

"Misleading claims that vitamin E supplementation of the ordinary diet will cure or prevent such human ailments as sterility, lack of virility, abnormal termination of pregnancy, heart disease, muscular weakness, cancer, ulcers, skin disorders, and burns, are not backed by sound experimentation or clinical observations. Some of these claims are based upon deficiency symptoms observed in other species. Careful studies over a period of many years attempting to relate these symptoms to vitamin E deficiency in human beings have been unproductive. The wide distribution of vitamin E in vegetable oils, cereal grains, and animal fats makes a deficiency in humans very unlikely. Premature infants or individuals with impaired absorption of fats may require supplemental vitamin E, but they should, in any event, be under the care of a physician".

This is the summary to the official statement on "Supplementation of Human Diets with Vitamin E" put out by the Food and Nutrition Board of the National Research Council and National Academy of Sciences, U.S.A.

If any reader would like a photocopy of the complete statement please write to the editor of 'Cajanus'.

(We thank the newsheet of the University of California's Agricultural extension programme for drawing our attention to this statement).

BREAST FEED BABY AND STAY SLIM

From The Guyana Graphic, 6 November, 1973.

Women who choose not to breast-feed their children, for fear of losing their figure, in fact run the risk of getting fat, a British doctor warned yesterday.

"For the mother who intends to bottle-feed, the accumulation of fat is an embarrassment and the resulting obesity is the price she has to pay for abandoning her reproductive cycle at the half-way stage," he said..

Dr. Donald Naismith, senior lecturer in the Department of Nutrition at Queen Elizabeth College, London University, said women should be encouraged to return to the practice of suckling their young. He was delivering an award winning paper at a meeting of the Royal Society.

WHO SAYS SOYA?*

By B. M. Popkin and M. C. Latham

Many commercial food products designed to solve nutritional problems in low income countries are based on agricultural products produced primarily in the rich countries. The industrialized countries, seeking an outlet for their own products, do so at the risk of harming the agriculture and the economy of the poorer recipient nations. One example is the wide use of soybeans in new foods for developing countries. A glance at the new foods developed with the support of AID "leads one to conclude that an unconscious prerequisite for program participation (AID support) might have been that a soy form be utilized". The data does not convince one that the favoring of the soybean has been entirely unconscious. Soybeans are a major agricultural crop in the United States with a 1972 production value for oil and meal of over four billion dollars, of which two billion dollars worth was exported. The nutritional quality of soybeans cannot be downgraded, for it is the vegetable product with the highest protein content. Nevertheless, it has certain disadvantages. It also has nutritional rivals such as the winged bean of West Africa, which has a protein content of thirty-three percent compared with the thirty-five percent protein of the soybean. There are, of course, developing countries like India and Brazil that grow soybeans, and the potential in several other countries is high. In fact, some countries, such as India, should grow soybeans because of its tremendous oil imports.

SOYBEAN PROTEINS FOR BANANAS**

By Zeki Berk***

One of the important potential sources of protein for direct human nutrition is the soybean. In fact, soybean meal (i.e. the material left behind after the oil of soybeans is extracted) is the cheapest source of edible protein available today, as is evident from the table. The yearly world production of soybean meal is over thirty million tons, representing approximately fifteen million tons of good protein. This however is used almost entirely in animal feeds, and the animal is a wasteful machine which gives back only a small proportion of the feed protein in the form of meat, eggs and milk.

*In: *The limitations and dangers of commerciogenic nutritious foods*. Amer. J. Clin. Nutr., 26, 1015-1023 (1973).

[The word commerciogenic was first used by Jelliffe - in a slightly different sense as "commerciogenic malnutrition" meaning malnutrition caused by the thoughtless promotion of commercial baby milks and infant food products, 'Cajanus' vol. 4, (1971) pages 377-383]. Photocopies of this paper are available to any 'Cajanus' readers from the editor.

**Reproduced from *Kidma*, 1, 29-30 (1973).

***Zeki Berk is a graduate of the Haifa Technion and holds a Ph.D. He is a professor in the Department of Food and Biotechnology at the Haifa Technion, Israel and Head of the Food Industries Research and Development Station.

Cost of Protein in Various Sources

Source	Cost of protein \$/kg
Milk, fresh, pasteurized	4.0 - 6.0
Skim milk powder	2.5
Meat	8.0 - 15.0
Eggs	4.0 - 8.0
Wheat	0.8
Soybean meal	0.3
Soybean flour	0.4
Isolated soybean protein	1.0

Thus, a tremendous amount of protein is wasted, while nutritionists all over the world talk about widespread protein malnutrition, due in large part to acute shortage in this vital nutrient.* Why then, is soybean protein wasted instead of being included directly in our food?

One of the reasons is the poor acceptability of crude soybean meal as food. It has a characteristic taste which is not liked by many. Its ingestion in large quantities may cause physiological disorders such as flatulence. Its culinary usefulness as a food ingredient is limited. Fortunately the poor acceptability is not associated with the protein but with the non-protein components of soybean meal. However, the desirable protein can be easily separated from the undesirable carbohydrates and fibre. The process involves extraction of the protein in diluted alkali, filtration of the extract and precipitation of the protein by acidification. The precipitate is almost pure protein and if properly washed, it is white and free of any (good or bad) taste.

Our group at the Technion - Israel Institute of Technology - has been engaged in soybean protein isolation research since 1962. The main purpose of our work was to optimise the process so as to increase yields and purity of the final product and to evaluate the nutritional significance of each step of the process. The operations were carried out at pilot plant level. We found that seventy percent of the soy protein can be recovered in the form of a white and tasteless powder, free of undesirable physiological effects.

The product, isolated soybean protein (ISP) is considerably more expensive than the crude soybean meal, but it is still one of the world's least expensive food proteins. Unfortunately, people do not eat "powders", even if they are white, bland and highly nutritious, so our next step was to investigate the possibilities of combining the isolate with acceptable food items.

*Editor's note: Of course nutritionists all over the world are also talking more and more about widespread energy under-nourishment of which protein-energy is a part.

Banana Potential

At this point, we shall digress for a moment from proteins to bananas - another problem of concern to many developing countries but this time a problem of surpluses, not shortages.

Bananas are one of the major fruit crops of the world, with a world production of twenty-eight million tons, all in developing countries (sixty-five percent in tropical Latin America, twenty-seven percent in Southeast Asia, seven percent in Africa). One-fifth of the crop is exported to Europe, Canada, U.S.A. and Japan as fresh fruit. Banana exports are among the principal sources of income and foreign exchange in many countries. However, the international banana market is very particular and requires strict quality standards under conditions of tough price competition. As a result, banana exports generate large amounts of "rejects", perfectly edible fruit which cannot be exported because of slight blemishes, non-standard size or shape. This is not unusual in the fruit trade but in most cases non-exportable rejects can be processed into valuable products such as juices, pulps, dried fruit, jams, etc. However, because of the chemical characteristics of the banana, processed banana products are few, their manufacture involves expensive procedures, and demand is not commensurate with the available surplus.

One of the few "established" banana products is banana powder, made by spray-drying mashed bananas. But ripe bananas have a high concentration of sugars and when fed into the conventional spray drier they yield a sticky mess instead of a free-flowing powder. This product is therefore made from green fruit which lacks the sweetness and aroma of the banana. It is not surprising that the powder is often referred to as "banana flour".

ISP - Banana Match

Having reviewed the problem of the banana, let us now come back to our soybean protein. In our attempt to find uses for our isolated soybean protein (ISP) we looked into the possibility of using this material as a "carrier" in spray-drying. We found that the addition of as little as four percent (on dry basis) of ISP to banana puree, permitted the use of a conventional spray drier. Not only was spray-drying made possible, but the product had a better colour and its storage stability was enhanced. Normally, fruit powders undergo a process of caking. Free flowing when first produced, they become a hard mass or cake after a short period of storage. Furthermore, they usually darken and become dark brown. Inclusion of ISP retarded both caking and browning.

Bananas have a readily acceptable, almost universally liked flavour. They are tolerated by infants, even prescribed as a desirable ingredient in their diets. They contribute calories but contain almost no protein. ISP is pure protein but has no flavour. Could the two be combined? If a little ISP can solve the problem of spray-drying of bananas, could more ISP be added to obtain a product both nutritious and palatable? To test these questions, ISP was added at increasing levels, ranging from four percent to forty percent on a dry basis. As expected, the spray-drying carrier, anti-caking and anti-browning effects of ISP were found to be even stronger at higher ISP levels. "Shakes" were prepared by blending one part of the spray-dried product with ten parts of water and sweetening with some sugar. The shakes were tested by a panel and

evaluated for overall acceptability. Powders containing up to twenty percent ISP were judged highly acceptable, but at the forty percent level a "floury" aftertaste was detected.

Opportunity or Dead End

The events that followed illustrate the gap between development and implementation. The results of our work were announced at the International Oilseed Protein Meeting in Tokyo in 1964 and later on several other occasions. A paper was published in 1967. Samples were prepared and sent to all interested parties. A large batch of the product was sent to a well-known nutritional research Institute which happens to be situated in a banana surplus country with protein malnutrition problems, for test feeding. The test was never carried out and the samples were lost. In 1969 we were invited by a U.N. agency to evaluate the economic feasibility of a banana-soy mixture processing plant in Madagascar. Unfortunately, production of soybeans in Madagascar was only beginning at the time and problems outside the realm of technology were expected.

Thus to the best of our knowledge, this modest contribution to the solution of two persistent problems for developing countries has not been utilised. It is good to know, however, that if and when the time comes, the technology is ready.

BREAST-FEEDING IN ENGLAND*

By R.D.G. Creery

The fact that a group of skilled scientific workers should feel it necessary to spend time, energy, and money in devising a breast milk substitute (BMJ, 13 October, p. 67) makes one wonder what is happening to the real stuff which to our certain knowledge has important biological advantages to the infant besides the production of a "correct" bacteriological flora and pH in the infant gut. Many tons of this unsurpassed infant food must be lost annually by failure to make proper use of human lactation.

The whole subject of the natural feeding of human infants is surrounded by an aura of abject defeatism. Many members of the professions concerned with child health appear to regard the promotion of breast-feeding as a lost cause, and much thought and effort are spent in concocting more elegant and expensive unnatural substitutes for human milk. There are clearly many factors in determining why women refuse to recognize that "breast is best" for their children; one factor at least in their denial of breast-milk for their children is a widespread lack of knowledge of the benefits of human milk for human babies and of the demerits of cow's milk as an infant food. Another is the obvious lack of interest in and support for natural feeding shown by many doctors (family doctors, obstetricians and paediatricians alike) midwives, and health visitors.

*In the *British Medical Journal*, 3 November 1973.

If one can manage to rekindle or arouse interest and enthusiasm among health professionals the results can be startling and the situation can be transformed in quite a short time.

May I quote our experience in Cheltenham, U.K? The percentage figure for breast-feeding on discharge (about 150 discharges take place monthly) serve as a crude but effective index of maternal motivation to breast-feed and have been rising steadily over the past few years - from forty-five percent in March 1970 to sixty-four percent in September 1973. This increase has coincided with an impressive improvement in staff attitudes towards natural feeding; much remains to be done to improve postnatal support for breast-feeding mothers, but a good start has been made in achieving a swing back to natural feeding. This must surely in time produce benefit to the infant health and in particular deter the occurrence of infant obesity with its potential sequelae. One would hope that other areas of the country are experiencing this recrudescence in breast-feeding. Where this has not yet begun I can only suggest that a trial of a positive and encouraging attitude may be confidently expected to improve matters and will be greatly welcomed by both parents and staff alike. If the young child could be consulted I am in no doubt that he also would approve of this increased concern for his welfare.

CAJANAQUOTE

Cost-benefit analysis has recently come very much to the fore (in national development planning) and is certainly extremely important. It is very hard, however, to produce figures which prove beyond doubt that nutrition should have priority. This is very sad, since it is notorious that nutrition has often been given low priority ratings in development planning and in requests for development assistance from abroad (there are exceptions, for example, in India after the Bihar drought and famine in 1966-67). But need it be so? Nutrition intervention programmes are part of health programmes, in the sense that both directly aim at improving the general health of individual citizens and of the population as a whole. Within the health programmes a careful analysis should be made of how the scarce resources should best be used (the proper balance between preventive measures and curative measures, &c.) but no-one has denied that health programmes are important and should be given due attention also in the Government budgetary allocations. In this respect, it is revealing that in each and every one of the Communist countries very high priority is given to health programmes in general and health programmes for children in particular. This has been done in circumstances in which otherwise cost-benefit consciousness has necessarily had to be omnipresent.

Prof. Bo Vahlquist
Lancet 31st March 1973, p. 716-717.

EATING AND LIVING*

by

*Prof. G. Debray
University of Nancy, France*

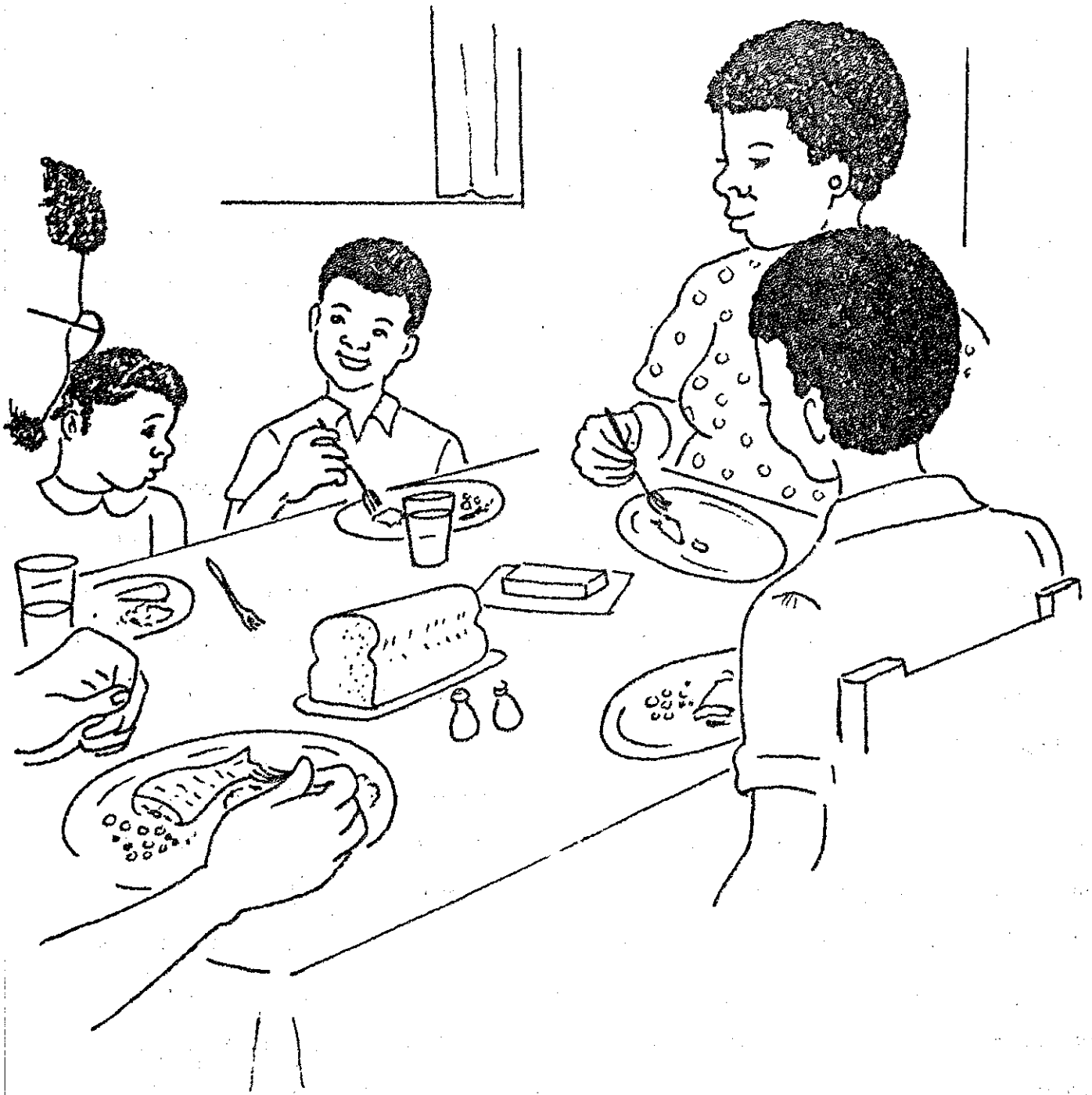
Man must eat to live, and he works in order to obtain his food. This simple but fundamental truth manifests itself in a variety of ways, depending on the historical, geographic, economic, social, religious and cultural setting in which each of us is born, grows, and dies.

Nutrition is thus influenced by many closely related factors, while our freedom of choice in food habits varies according to the circumstances in which we are born and live.

Perfection in dietary habits is not essential; provided a person does not suffer from malnutrition or overnutrition, which may cause ill health or even death, his body is able to tolerate a wide range of diets without apparent harm. Indeed, the human body possesses an amazing capacity for adaptation to the most diverse conditions. Consequently, no precise estimate can be made of the normal requirements, which vary according to circumstances. In attempting to establish standards, the "reference man" can, in theory, be used, but in actual practice standards always correspond to the average values for a certain number of subjects who are recognized as being healthy and who satisfy all the other necessary criteria.

The individual is motivated to eat by a number of conscious and sub-conscious factors, some of which are deeply rooted in traditional, social and religious customs, which have ensured the survival of the species. The process

*Condensed from an article "Home Cooking Is Best" in 'World Health' Feb./March 1973.



of taking food is also associated with various sensations, such as satisfaction or dissatisfaction, and feelings of security or insecurity.

The insight man has gradually acquired concerning himself and his fellow-beings should caution us not to over-simplify the problem of nutrition. Indeed, bad planning has often resulted from naively comparing the human body to a machine that merely needs to have its energy requirements satisfied.

It is essential to avoid suddenly disrupting the associations that have gradually evolved over the centuries between man's eating habits and his mode of living; such considerations should always be taken into account in giving advice on better nutrition. The act of eating arouses within us a multitude of emotional and sensory overtones, and brings back forgotten memories, facts that are fully appreciated by those responsible for advertising food products.

In addition to wide differences in behavioural patterns, economics are important. The changes that industrialization and urbanization have brought about in ways of life are universal, affecting both the developing and developed countries. The seriousness of this upheaval, especially in the developing countries, is due much more the rapidity with which such changes have occurred than to their nature.

Man is not well adapted to sudden changes in his way of life, and may need several generations to alter his behaviour without running serious risks. Sudden upheavals in the social and economic structure of rural life, disturbances in rhythms of living and working, and the knowledge of, hence a desire for, hitherto unknown goods, including food products, are changes that may have serious repercussions on the mental health of individuals as well as on family budget. The feeling of isolation within urban communities, and the physical and emotional disintegration of families, create dissatisfaction and insecurity as compared with the traditional atmosphere of family meals.

Improvement of nutrition depends on knowing how to obtain foods, how to prepare them, and how to use them in order to satisfy our needs.

Knowing how to buy is an art; but it is made increasingly difficult by advertising, which subtly arouses our desires and appeals to our unconscious wishes. In countries at all levels of economic development, people tend to buy what is expensive: the rich from a desire to have the best, those of limited means out of a desire for social advancement or to imitate the rich.

In developing countries, therefore, expensive imported foods, which are bought by the rich, are often preferred to the local product, though the latter may be more nutritious. Tinned milk products, for example, compete with weaning foods made from locally grown cereals and vegetables.

The constant appeals of the consumer society lead to money being squandered on unnecessary foods to the detriment of health.

Knowing how to evaluate needs, to ensure a balanced diet, and to make up menus are merely the material conditions that enable us to satisfy our nutritional requirements. Even an excellent and well balanced diet can really satisfy our needs only if the emotional and social atmosphere of the meal is preserved.

CAJANAQUOTE

"He was a bold man that first eat an oyster"

*Jonathan Swift
(1667-1745)*

CORRECTIVE MEASURES FOR CHILDHOOD MALNUTRITION*

by

A.C.K. Antrobus
Caribbean Food and Nutrition Institute

The use of the term "corrective measures" carefully avoids the rather more specific terms "treatment", "management" or "prevention"; in fact, it embraces them all. It carries the connotation that, nutritionally speaking, something has gone wrong, needs to be put right and, should not be allowed to recur.

The first question that we might ask is "where do we find the children that have gone "nutritionally wrong" - the children that are malnourished?" A small percentage are in hospital, some can be found at district clinics and doctors' offices, but there are large numbers in homes. Generally speaking, the very worst of these children are in hospital, and those that are only mildly malnourished are at home, their condition unrecognised.

Corrective measures will, therefore, vary according to these circumstances, viz:

- the severity of malnutrition;
- the physical location of the malnourished child in relation to the availability of adequate services and measures for treatment;
- and, not least of all, the policy or individual judgement of the health professional or institution involved in the case.

Undoubtedly, at least in the Commonwealth Caribbean, the place for the severely malnourished child is in hospital, especially when one considers the frequency of concurrent illness among which the diarrhoeal diseases are by far the commonest.

**This paper is based on a talk given at a seminar on "Nutrition and Family Planning" in St. Vincent, July 25-27, 1973.*

Hospital management, to play an effective role in the correction of malnutrition, should include the following measures:

- emergency treatment, especially rehydration;
- anti-infective therapy (antibiotic and chemotherapy);
- carefully monitored progressive feeding;
- supportive dietary therapy - iron, folic acid, vitamins;
- psycho-social stimulation;
- parent education;
- adequate follow-up, including referral to the most conveniently located child welfare clinic.

The moderately or mildly malnourished child seen at the clinic should only in exceptional circumstances be admitted to hospital. The district or public health nurse should have both the competence and the confidence to advise *expertly* in the home management of such cases backed up by clinic support.

The measures that could be adopted include:

- treatment of infection (if not severe);
- dispensing of iron, folate or vitamin supplements;
- dietary advice, including simple demonstration of food preparation. (Especially feasible if there is supporting staff in the clinic or in the field such as midwives or community health aides);
- referral, as seems necessary, to district doctor or paediatric clinic;
- surveillance in the home or at clinic by the nurse.

It is at this level that one recognises the value of the roving paediatrician - child health specialist meeting referred patients at their "home clinics" in preference to patients always going to the medical metropolis.

The child who is only mildly malnourished is, in a sense, the biggest problem. If we use the very common, but appropriate, iceberg analogy, this group of malnourished children are the deeply submerged, dimly perceived, if

not invisible, broad base, contrasting with the relatively narrow but prominent and readily recognisable peaks of marasmus and kwashiorkor.

What makes this group so important?

- (i) It represents the earliest stages in a pathological process prior to a progressive, at times rapid, decline into the extreme state of malnutrition. To arrest and reverse the process at this point is a way of ensuring a reduced morbidity and mortality from malnutrition.
- (ii) there are dangers associated with a chronic state of undernutrition of which this may be the beginning. These are the sequelae such as impaired physical growth and mental development and, in turn, impaired quality of life for the affected individual and perhaps community.
- (iii) this stage of malnutrition can be the most readily and simply treated at least cost; and full recovery without adverse sequelae can be generally anticipated.

But in all matters related to health, better than correction is prevention. In no aspect of health is this more important than in nutrition: one just has to think of the dietary basis of coronary heart disease and diabetes, diseases of such high morbidity and mortality among the adult population. How much more important prevention must be in the case of childhood malnutrition which may lead to untimely death, stunting of growth and blighting of intellectual potential?

The preventive approach must be rooted in education, the organisation of which may be at different levels, e.g., a national or country-wide strategy for health (including nutrition) education, a parochial or district level of organisation or even at the community level with the initiative, coming from within the particular unit of population. Of course, these levels are best integrated but the smaller units may function in the absence of a grandiose national structure.

What is of prime importance is the selection of clear, simple and realistic goals which must seem attainable. The methods and the measures to be used must be equally clear, simple and realistic - preferably a small number of goals and measures to be concentrated on at any given time.

The actual methods of approach will depend on a variety of factors which include:

- types of media available;
- funding (if any!);
- level of government, agency, or commercial support;
- numbers, quality and training of personnel;
- degree of community concern;
- standard of living and level of sophistication of the population in question.

It is on the basis of these factors that the use of television, radio or newspaper will depend. Nevertheless, even if all factors do not ideally favour the use of these key members of the mass media family, no effort should be spared in attempting the breakthrough!

Best of all would be the securely sponsored, regularly presented feature capable of attracting a varied following of interested people. Such a situation can, however, hardly be attained without the solid support of governments in granting space or time, depending on the medium used.

Ancillary to the mass approach and, in fact, an ideal complement to it is the *small group* approach. Such groups may be ready-made gatherings at ante-natal or child welfare clinics, or in maternity units, or the semi-social groups founded on school, church or other community activities.

The advantages over the mass media are clearly:

- (I) because of the lesser formality and more restricted exposure to the public, it may be easier to obtain speakers or other persons to make presentations;
- (II) audience participation and involvement are possible and can be used to great advantage;
- (III) a greater variety of audiovisual material can be effectively used, not excluding demonstrations of food preparation.

The third type of educational experience possible is at the person-to-person level. In effect, this means home-visiting. Though this undoubtedly calls for a greater investment in time and manpower resources, it is often an eminently rewarding approach to parent education. Achievements may be especially noteworthy because of the outreach to persons who either do not belong to or do not attend group functions. The scope for establishing meaningful relationships between "teacher and learner", and the individually paced progress lead to stronger motivation and response on the part of the learner, and this in turn enhances the enthusiasm of the teacher-visitor.

The obvious question which now arises is "who are the teachers? Who must do the educating." The equally obvious, but only partial answer is "the public health nurse and other health personnel such as midwives, public health inspectors, and community health aides." But, in addition, the recruitment and training of indigenous volunteers deserves consideration and trial; and it is not difficult to define a clear subsidiary role for them in this total scheme of education.

At the same time, this cadre of assistant should not be taken for granted. There are problems of motivation and, above all, just ordinary staying-power, hence, the need to examine the role of incentives in order to augment these important qualities.

It seems worth reiterating that nutrition as a subject ought not to be dealt with in isolation if only because of the possible tedium and consequent decline in interest that might result. It were best woven into the fabric of other activities both within the boundaries of health and beyond.

All of the measures outlined will, however, be incapable of optimal results in the absence of government support that is at least *adequate in quantity and quality*. This goes well beyond paper policies, token pledges associated with ministerial visitations, or verbal acquiescence to the good ideas that pervade conference rooms. These, necessary as they may be, cannot do the job alone. The Caribbean too often has suffered a type of pseudo-paralysis in which the job is neither done nor even appears to have been done. Certain fundamental needs in the area of training, personnel and equipment just have to be squarely met if basic tasks in the health field are to be accomplished effectively and with a quantum of efficiency. Likewise, every member of the health team must play his or her role at least adequately and earn a higher mark than the token "satisfactory". A pretentious or grudging approach to one's responsibilities and duties as health personnel, however justified intrinsic adversities and frustrations might make it appear, can contribute nothing to the solution of the problem of malnutrition. As it always has been, is and, in the foreseeable future will be, the solution depends on work, real work, and damned hard work.

RECOMMENDED DIETARY ALLOWANCES FOR CARIBBEAN COUNTRIES

by

J. A. Campbell*

Recommended dietary allowance may be defined as the daily amount of a nutrient considered sufficient for the maintenance of health of most people of a given group or country. Statements of allowances have been published by WHO/FAO as a result of the deliberations of expert committees. They have also been published by many countries individually.

Such statements of recommended allowances have many uses including the following:

- (i) for assessing the adequacy of food supplies of a country;
- (ii) as a basis for formulating food and nutrition policies for a country;
- (iii) along with other criteria for assessing the adequacy of diets of individuals;
- (iv) in the formulation of adequate diets in hospitals and institutions;
- (v) as a basis for legislation relating to nutrient supplementation and label and advertising claims.

It is obviously important that such allowances be reliably based and that insofar as possible differences between countries be eliminated. In this connection it is instructive to review data which have been used in assessing the adequacy of diets in various surveys in the Caribbean area. Some of these are given in the table on the opposite page.

In a review of this table, one may question why for example, the vitamin C allowance for adult women in Barbados was set at 45 mg. and in Trinidad and

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Recommended Allowances for Women 30-39 Years of Age

	Weight (kg)	Age (years)	Calories	Protein (gm)		Iron (mg)	Ascorbic acid (mg)
				Ref.	Total		
Barbados (1969)	60	30-39	2,270	42.6	71	12	45
Guyana (1971)	65	20-40	2,600	33.8	73.7	19	30
Trinidad (1970)	60	30-39	2,415	42.6	78.0	19	30
Jamaica (1969)	-	20-50	2,070	?	60.0	12	20

Guyana at 30 mg. On the other hand, the allowance for Iron in Barbados is only fifty-eight percent of that for the other islands. Discrepancies also occur in reference protein for which no clear explanation appears available. Differences of this magnitude not only occur in the Caribbean; they may also be found to exist between allowances set out for Canada, U.S.A., and U.K. They should not be looked upon as errors but rather as differences in philosophy and in the considered assessment of available data by experts in the field. Nevertheless, they are a source of concern.

In a paper presented before the Annual Meeting of the American Dietetic Association¹ the author took the positions that any country formulating its recommended dietary allowances should insofar as possible use the FAO/WHO recommendations. If it is found necessary for particular nutrients to deviate from these figures, the reasons should be clearly given. Such an approach should do much to standardize the evaluation of food supplies of various countries and promote international coordination in food labelling and advertising.

It may be noted that FAO/WHO have just recently published revised allowances for energy and protein.² During the year CFNI proposes to bring together a group of clinicians, nutritionists and dietitians representative of the area to review available data and to develop a table of allowances which may be

considered applicable to the English-speaking Caribbean area. Should readers have any suggestions relating to this problem it would be appreciated if they would submit their comments to the Deputy Director, CFNI, or the editor of 'Cajanus' if they wish them published.

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CAJANAQUOTE

Health education is listening. Listen to the villager and do not talk to him so much. For instance, to handle the problems of malnutrition well one should know not just the deficiency in the diet but all the other causative factors. One should listen to the patient and to the mother of the children. If you listen you pick up the problems closer to him. It is well to remember that health education is not just teaching. It is listening...

*Dr. Cicely Williams
Speaking in Accra, Ghana.*

NUTRITION NEWS AND OPINION FROM THE CARIBBEAN

LIEBFRAUMILCH

By Thomas Wright. The Daily Gleaner (Jamaica) 16 February 1973.

I have a friend whose one fault is that he tends to oversimplify problems. Yet in spite of this, much that he says is the product of valuable insight. He maintains, for example, that most of the troubles of our era have been caused by feeding bottles and Dr. Benjamin Spock.

Years ago, you will remember, Dr. Spock wrote a book called "Baby and Child Care", which became a runaway best seller. He advocated the abolishment of the traditional disciplines in the upbringing of children, and said that they should be allowed to express their aggressions freely and make their own rules. If some brat sets about smashing up the furniture or smearing the walls with paint this, according to Dr. Spock was an exercise in creativity which, if suppressed, would have dire results on the child's future mental health.

The book was most effective in the U.S.A. and resulted in a generation of little American monsters, which any mentally healthy adult secretly craved to shoot on sight; my friend maintains that this early lack of discipline, not only among American children but among all the children to whose parents the Spock doctrine had spread, set the stage for our current anarchic tendencies.

The feeding bottle

What was worse, says he, is that the consequences of the Spock doctrine were reinforced by the feeding bottle. Incidentally, it is interesting to note that Dr. Spock, who is now over eighty years old and has had some recent experience of students who are not potty-trained, intellectually speaking, has now recanted and has publicly withdrawn all his former views.

The trouble with the feeding bottle, my friend tells me, is that milk is obtained from it too easily. The child at the breast has to work for his living, a lesson which nobody is ever too young to learn. So says my friend, if a child learns that all he needs to do is to open his mouth and let the milk run in, and then on top of that grows up to believe that he is entitled to smash up the furniture with impunity, you get the perfect picture of the young people of the sixties and seventies.

Breast is best

This may or may not be so. But there are a number of other reasons, economical as well as psychological, why I am all for Dr. Matthew Beaubrun and the M.A.J. in their efforts to encourage breast feeding in Jamaica. But they are going to have a hard battle. So many present trends are against them.

There is, first of all, the cosmetic aspect. The motion picture, especially the American motion picture, has taught us everything except moderation, good taste and good manners. Among its lessons has been the Glorification of

the Breast, not as mammary appendage for the feeding of children, but as an overdeveloped symbol of eroticism. Sometimes natural, if that is the word, sometimes pumped up with wax or silicone, these great upstanding boobs point at us from the wide screen in Glorious Technicolour virginal and unfed-from; titillating us, so to speak, into fantasies of pneumatic bliss. The breast is no longer functional for feeding. It is to be used to beckon grown men and to achieve the marriage in which the couple, living happily until divorce do them part, produce bottle fed children with the breasts saved for the next conquest.

Baby foods

That, roughly speaking, is what our young women learn, not that feeding a baby will necessarily leave their breasts droopy. Besides, in Jamaica, where men do not consider it necessary to look after their women or their young, women have to get back to work as soon as they can and so wean their babies as soon as possible for economic as well as cosmetic reasons.

In this, they are aided and abetted by the advertisers of baby foods. No matter how good the baby food happens to be, it is never as good as breast feeding; and it is considerably more expensive. Branded baby foods are all overpriced anyway, partly because the expenses of T.V. and other advertising must be costed in; and there is something very sad about a situation in which mothers are brainwashed into believing that bottle feeding is a kind of status symbol as Dr. Beaubrun has pointed out, some mothers who cannot really afford the commercial baby foods so dilute them with water as to cause their babies to suffer from malnutrition.

Saving imports

I do not know whether anyone has calculated how much in the way of imports could be saved if every woman who could do so breast fed her baby. At the risk of sounding rather like that Ram in that delightful spoof in "It", now running at the Little Theatre, if you calculate the number of pairs of breasts potentially or actually in lactation and multiply it by a reasonable total of the period of lactation, you get - or at least I get - a figure of something like 2½ million quarts of Liebfraumilch (not from the Rhine) per year, and this would save us one hell of a lot of foreign currency.

The production of mother's milk seems to be a neglected local industry, though whether it should come under the Ministry of Health, the Ministry of Natural Resources or the Ministry of Agriculture I do not know. Perhaps it should be put within the portfolio of the Prime Minister, whose good looks and popularity could give the whole thing a total new thrust, if not a total new droop. There are worse slogans than "Make Milk for Michael", or "Mammal up yourself with breast feeding".

But joke or no joke, the degree to which the commercial motion picture, and advertising interests, combined with our neglect of women and children hold people in thrall, is not in the least amusing. One must hope that Dr. Beaubrun and the Medical Association of Jamaica meet success with their new campaign.

MISLEADING ADVERTISING

By Thomas Wright. *The Daily Gleaner (Jamaica)*, 14 February 1974

I must begin this piece by disclosing a special interest. I am a director of a pharmaceutical manufacturing company that sells an iron tonic which could be considered to be a competitor of an iron tonic known as 'Feratryl'. But as on a former occasion I took a slap in this column at the advertising claims made for the product manufactured by the company of which I am a director, I see no reason why I should not also comment on the claims made for one of its competitors.

'Feratryl' is an iron tonic distributed by Mead Johnson. I have no doubt that as such it is a good tonic, but tonics are not cure-alls and there never should be a claim that they are.

Down and out

"When you are feeling really down and out and nothing seems to help, 'Fetatryl' will." If you consider that slogan for a moment you will, I think, agree with me that it is not a claim which could honestly be made for a tonic. You can be feeling "really down and out" for all kinds of reasons, from generalised septicaemia to cancer; from a kidney complaint to heart disease. In fact, there can be all kinds of diseased conditions which can make you feel this way for which an iron tonic would be of no help whatsoever. Indeed, there is really only one condition in which an iron tonic is of specific help and that is if you have a low blood count; that is, if you are anaemic. And even so, there are some anaemias which are not helped very much by dosages of iron by mouth.

I gather that in 'Feratryl' some vitamins are added and these certainly won't be of any help unless you are suffering also from vitamin deficiency. The proper claim, therefore, for any iron tonic with vitamins added should be to the effect that in some anaemias and in some cases of vitamin deficiency an iron tonic may be of help. The claims for 'Feratryl' as set out in the statement above, are therefore, misleading and should not be made.

Control Board

I have telephoned the official at the Drugs and Poisons Control Board concerned with checking advertising for drugs. He told me that the application for this ad was approved last year March and that when he saw the slogan merely in writing it seemed alright, but that some time subsequently when he saw it on TV it was borne in upon him that it was misleading.

The Drugs and Poisons Control Board official then told me that he had taken the matter up with Mead Johnson and asked them to discontinue this particular claim. Mead Johnson then pointed out that, having had the initial approval, they had invested a good deal of money in advertising material and, therefore, it would create a loss to them to discontinue so soon. They wanted to be able to run the claim for two years. The Drugs and Poisons Control Board official tells me, however, that he has told Mead Johnson that they must discontinue this particular series of ads at the end of March this year which would

be approximately one year from when it started.

I suppose there was nothing else that he could decently do, having given Mead Johnson the go-ahead in the first place. It was unfortunate that this should have happened. But it is also unfortunate that a misleading claim of this nature will, by the end of March, have been pushed onto an unsuspecting public for twelve months. I can only advise him and the advertising fraternity to be a little more careful if truth in advertising is what they are concerned about.

MALNUTRITION, GASTRO - A VERY GRAVE PROBLEM
By Phillip Fraser. Trinidad Guardian, 10 December 1973.

In July 1971, Professor K. L. Standard, in a paper published in 'Tropical Doctor', stated that "gastroenteritis and malnutrition are two of the more important health problems of the area" and that "the infant and the young child are extremely vulnerable."

He also reported that "an investigation was carried out in Jamaica in 1963 - 1964 into the deaths of 285 children, a ten percent random sample of the deaths occurring between six months and three years of age during the period.

Completed questionnaires were received for 204 (71.6 percent) of them. Malnutrition, as the main or as a contributing factor, was mentioned in 70 (34.3 percent) of the 204 registered causes of death, and was considered to be the main or a contributing factor in 132 (64.7 percent) of the deaths.

No such investigation was ever carried out in Trinidad but the fact is that there is a problem of similar magnitude here. No doubt it has to some extent been brought under control since 1964; but it remains - as I found when I visited the Pediatrics Department of the Port-of-Spain General Hospital last week.

This Department - taking all the children as it were in five wards - is "a hospital within a hospital."

Out of place

As a result, it is almost impossible to deal with all the ailments afflicting the children there. Rather, it would be logical to deal with two of the most important - gastroenteritis and malnutrition - and to mention (space permitting) a few of the others.

Malnutrition is anathema to a large percentage of the population. It would seem "out-of-place" in this land of "enough" if not "plenty."

There are a few pathetic cases, however. One particular case I saw at the Hospital was a three-year-old baby boy. He was no bigger than an average-sized ten-month old baby and very much lighter.

His head and stomach appeared to be the dominating features. His arms and legs, long and thin, could scarcely support him. A nurse told me his was an advanced case, probably caused by the parents who neglected to take it "in time". Some of the children spent more than three months at the Hospital, she said, and they "fatten" them and send them back home.

And while only the more serious cases reach the Hospital wards, there are a number which go undiscovered because many parents feel that it is "not a sickness - so the hospital can't do anything about it."

We turn now to gastroenteritis. From one-fifth to one-third of all child deaths are due to gastroenteritis. In children under five years of age, the great majority of deaths are due to this condition.

It is caused by unsatisfactory environmental conditions and especially unsafe water supplies and lack of proper sewerage disposal. Recent studies of causes of death in the Americas have shown the close relationship between diarrheal disease and other infectious diseases on the one hand and malnutrition on the other.

During the long drought earlier this year, there were a number of deaths due to gastroenteritis - both in hospital and out. Accurate figures are unavailable.

Hospital authorities maintained that there was "no epidemic" but at no time then were there less than sixty cases of gastro on the ward (fifty-four) of the Port-of-Spain General Hospital. At the present moment, the number fluctuates between thirty-eight and forty.

HUNGRY CHILDREN

By Marcus. Daily News, Jamaica, 6 December 1973.

It used to be said that nobody had to go hungry in Jamaica, because there was always some fruit in season, or else a breadfruit waiting to be picked. I have always doubted the truth of that statement, and today it is less true than ever.

True enough, there are a lot of us who are fed and comfortable. But how many of us know that there are hungry children around us all the time? Apparently we just do not care, because it is not hard to see them.

People in Kingston only have to walk around Cross Roads and Half-Way-Tree, especially after dark. Go around to the back of some of the snack bars and restaurants, and you are quite likely to see three or four ragged, dirty little children scrounging in the garbage bins for food that has been scraped from the plates of customers.

And this is only one area of the city. Similar scavenging goes on all over the place. Some children sleep on piazzas, in bus shelters, or in road culverts, and have not known for a long time what it was like to have a meal cooked for them.

You may say that these children are hungry because they have run away from home, but this is not always true. Staying at home does not always mean having food to eat.

Stealing

Lots of parents who are comfortably situated would expect their own children to raid the refrigerator when hungry. Do they realise that there are parents in Jamaica who brand their children as thieves for the crime of being hungry, and 'stealing' from the family pot while a meal is being prepared?

Burning the child's hand in boiling water, or in the coal stove is a punishment that is too often given for this crime. And there are other penalties for being hungry, both at home and at school.

Teachers can tell you of children who are dull and listless in their classes because they left home without eating anything much; children who disappear when lunch time comes, because they are ashamed to let others know that they have neither lunch nor lunch money.

School meals have helped many children, and the new protein-packed patties will rescue many more, when they become popular and widely distributed. But school food has to be backed up by balanced meals at home if it is to be really effective. And, in any case, it is only reaching the children who attend school. What about the 100,000 who have never been registered in schools, and those who drop out, or scull school to live by scrounging?

Malnutrition

I do not know whether what we have in Jamaica can be called real starvation, but doctors can tell you that a great deal of malnutrition is seen in the clinics and hospitals. Children die because of severe malnutrition; moderate malnutrition makes other diseases much worse.

Feeding may be irregular, or it may be stretched too much; sometimes plenty of food is given, heavy and filling, but not the kind of food needed to build good teeth, and strong, healthy bodies. And it is not always easy to blame the parents, when chicken, fish, meat and dairy products are all too expensive for poor people.

Jamaica has the land, and the sun, and the water (if we plan properly) to produce heaps of food. Two weeks ago, farming columnist Percy Miller saw chances of Operation G.R.O.W. beating the foodstuffs shortage in a "relatively little time". We have to urge the Government to back this up by immediately subsidising at least one protein foods, so that poor people can buy it, and help to fight the scourge of hungry children in the land.

NEWSPAPER CLIPPINGS

AGRICULTURAL REVIVAL YEAR
From The Vincentian, 11 January 1974

Hon. James Mitchell has designated 1974 Agricultural Revival Year and exhorted his Agricultural Officers to remember the importance of total involvement, at the grass root level, in the programme. But what is the programme? This is the key to the whole agricultural situation in St. Vincent today. Programmes that lack precision, leadership that does not set out clearly defined paths, schemes which subscribe to praiseworthy ends and forget the practical means needed to make fruition a reality.

Some of the areas of agricultural activity which it is hoped to cover have been outlined. Two are specific - a massive tree-crop and re-afforestation drive, and the planting of ornamentals in public places and along roadways. The former has economic implications which could bring considerable ultimate benefit to the State, not only in crop returns but in soil conservation aspects.

The planting of ornamentals is commendable - any effort to beautify the country is commendable - but can hardly be regarded as an inspiring feature in an agricultural revival programme for the State.

On the other hand, reorganisation of farmers' groups is a praiseworthy but diffused operation which requires an entirely different approach from adoption of any urgent measures for the resuscitation of agriculture in the country. In fact, practical steps towards agricultural revival could do more than anything else in the promotion of viable farmers' groups.

It might have been expected that direction of effort in such specific fields as arrowroot and perhaps Sea Island Cotton would have been prominent in any agricultural revival programme. It also would have been good to hear that something in the area of self-sufficiency in sugar was being contemplated. Political initiative in the establishment of production incentives, processing facilities and markets are essential elements in any "revival" programme.

Be all this as it may, we sincerely applaud the idea of designating 1974 Agricultural Revival Year. He has launched the ideas and the Premier has the right to look to his officers for help in filling in the details. It is up to the chief executives in the Agricultural Department to direct thoughts and activities towards arrowroot, cotton, sugar, fruit, vegetables, cattle, poultry or any other produce that their technical knowledge and experience dictate. Mr. Mitchell has asked them to remember the importance of the grass root level of activity and if they grant this request a worthwhile programme, based on the country's needs and potential, will emerge - provided Mr. Mitchell makes sure that government establishes the infrastructure for action, politics are kept out of the whole affair and propaganda is not mistaken for accomplishment.

We hope that it will indeed be possible to involve the farmers, agricultural personnel, voluntary groups and "all 90,000 inhabitants of the State" in participation. The idea of a State-wide exhibition is an excellent one, as long

as the emphasis does not change from "agricultural revival" to "a big show."

Another facet which cannot be forgotten in any hope of a true, lasting, agricultural revival in the country is the wage paid to farm labourers. It is human nature that a man will hang around the Public Works Department in the expectation of even an unskilled job, like trimming verges on the roads for a minimum wage of \$4.00 per day rather than reap arrowroot or plant corn for a minimum of \$3.50 - unless of course he has a share in the arrowroot or corn.

If Agricultural Revival is to mean anything at all, the earnings of the people working in it must be competitive. Unless this is so, even an economic boom in other fields could prove detrimental to this one, for labour would shift from the fields, leaving crops unharvested and livestock uncared..

We support Agricultural Revival Year to the full and hope that 1974 will see vital leadership come from our Department of Agriculture and a pertinent and enduring Union emerge from our Farming Community. Success will come if the of the country, the potential of the land and the will to produce can be harnessed into a workable team, directed by the type of government initiative that is both knowledgeable and devoid of political interference.

WE MUST HELP TO MAINTAIN STANDARDS

From The Advocate News, Barbados, 10 January 1974.

The Barbados National Standards Institution (BNSI) has issued a document of great importance to Barbadian consumers, marketers and traders.

It is a draft standard specification for the general labelling of commodities in Barbados and is intended to improve labelling in the country.

The general requirements set out in the draft specify that a label affixed, or marked on a commodity or its packing shall conform to the following requirements:

- It shall give a description of the commodity and shall provide adequate information to a potential purchaser to select the commodity best suited to his or her needs.
- This shall include the weight, volume, measurement or size as applicable.
- It shall, if necessary provide a purchaser with appropriate safety instructions.
- It shall, if necessary, provide a purchaser with operating instructions and information on care and maintenance.
- It shall provide information enabling both manufacturer or supplier to be easily traced.

- It shall provide information relating to the country of manufacturer or origin.
- It shall be legible and durable up to the point of sale and where appropriate during the normal working life and use of the commodity.
- It shall not contain information that is false, misleading or deceptive, or is likely to create an erroneous impression regarding its character in any respect.
- It shall not contain information by words, pictorial or other devices which refer to, are suggestive either directly or indirectly, of another commodity with which such a commodity might be confused, or in such a manner to lead the purchaser or consumer to suppose that the commodity is connected with such other product.

Even in the decade of the 1970s of the twentieth century such regulations are necessary, not only because Barbados has lagged behind accepted practice in this area, but also because consumer consciousness and manufacturers' pride cannot together ensure that the best quality is always provided in goods, or that harmful ingredients or defective components are always excluded from commodities.

The stipulation relating to country or origin is a requirement that Barbadian manufacturers have been avoiding. It is difficult to understand why many Barbadian products are not labelled with pride as coming from this country.

Can it be that despite continuing efforts to improve the quality of our products we still believe that anything foreign is better than anything local?

Harmful ingredients

A number of Barbadian food products are available on the supermarket shelves and in the shops, with no guarantee that they do not contain harmful ingredients, and with no mention of the quantity in the container or the name of the manufacturer.

The stipulation about quantities, volumes, and measurements is essential. Often similar products are displayed for sale side-by-side. The price and the shape of the package differs, so unless the quantity of contents is clearly set out, the consumer has no way of knowing whether he is getting the best value for his money.

Essential too is the need to spell out component ingredients. So urgent is this need, that even the United States has recently had to augment legislation to ensure that cosmetics ingredients were clearly itemised on every product.

Certain ingredients in popular beauty preparations were proving injurious to skin, scalp, hair, eyes and constituted health hazards - and this despite the fact that the United States has an efficient and powerful Bureau of Standards, a Good Housekeeping Institute and vigorous and enlightened consumer organisations.

Barbados National Standards Institution is still in its infancy and the nation's quality and economy consciousness must be called into doubt, judging from the lack of enthusiasm for the Bajan Consumer League.

Now it seems that BNSI has taken a step to protect the consumer from himself. But despite the stipulations of the BNSI, unless the buying public familiarises itself with what is required and becomes knowledgeable about what products should deliver for his money and safe use, the standards will erode.

The BNSI cannot police all products. The Barbadian consumer must be vigorous in this role. We must know the required standards and become involved in seeing that they be maintained.

FOOD BANK

From The Daily News, Jamaica, 6 December 1973.

The Jamaican Government's decision to establish a Food Bank on an island-wide scale is a welcome step towards correcting some of the social imbalances in the society. We hope it will be possible after the initial period which takes the programme into March next year to have it running on a regular basis.

The continuation of such a vital programme will of course depend on whether the Government can set up the proper machinery for operating such a bank, and the even more important matter of the country's farmers being able to maintain food production at a high enough level to ensure that there are surpluses.

One of the weaknesses of a scheme of this sort is that many people abuse this type of public facility. Those who have been asked to submit lists of names of the most needy should therefore understand the nature of the programme and make their recommendations on the strict basis of need rather than on the basis of any particular affiliation.

Without putting undue burden on those who have to disburse these benefits, the Ministry of Pensions and Social Security should also apply some sort of means test to ensure that only those people who come forward for assistance, as well as those recommended are really deserving.

The programme recommends itself on purely humanitarian grounds.

CFNI NEWS

REGIONAL MEETING ON MALNUTRITION AND GASTROENTERITIS*

A Technical Group Meeting, of over forty health and nutrition experts and officials from the Caribbean, took place between January 8th and 11th at the University Centre.

The group was headed by Dr. Philip Boyd, Chief of the Commonwealth Caribbean Health Section - and was drawn from the entire Caribbean Region, including the University of the West Indies, the Pan American Health Organisation, the Caribbean Food and Nutrition Institute, the St. Vincent Planned Parenthood Association and the Save the Children Fund. They reviewed the trends and the present situation regarding malnutrition and gastroenteritis; identified specific goals and formulated a plan of action to deal with these diseases.

The meeting came as a result of a resolution adopted by the Fifth Caribbean Health Ministers' Conference in Dominica in February 1973, which called on CFNI, the Faculty of Medicine of UWI, PAHO, FAO and the Secretariat of the Caribbean Health Ministers' Conference to cooperate in formulating a strategy and plan of action to deal with these conditions.

The Executive Secretary will coordinate the efforts and report on the results to the Sixth Caribbean Health Ministers' Conference, and the general guidelines and recommendations may be adopted by the various territories.

At the opening session, which was chaired by His Excellency the Governor of St. Vincent, Sir Rupert John, the group was addressed by Health Minister, Victor Cuffy, and a special feature was a prepared address delivered by Dr. Boyd on "The Unseen West Indian Epidemic."

He said he shared the asserted view of the officials of the assembled nations of the world that the most important aspect of health care, where our countries are concerned, is that which relates to mothers and children.

Dr. Boyd said that protein-calorie malnutrition and gastroenteritis, frequently in combination - are the biggest killers of young West Indians between the ages of five months and two years, and the death rate of mothers in our countries is six times as high as it is among North American mothers.

"Indeed", said Dr. Boyd, "what we have in many of our countries is in fact, an epidemic that is unrecognised - an unseen epidemic." But he added that ninety percent of the problem is preventable.

*Taken from the *Vincentian*, 11 January 1974.

NUTRITION WEEK IN MONTSERRAT

The Diploma In Community Nutrition (DCN) students and some of the staff spent part of January in Montserrat during which period they held seminars with Government officers and others in education, health and agriculture. The students and staff also participated in radio broadcasts.

The students wrote, directed and performed in a very popular evening show in which nutrition principles were put across in a dramatic fashion - the loving embrace of 'rice' and 'peas' was a high spot of the evening.

The Montserrat Mirror produced a five page Nutrition Supplement for the occasion. The Chief Minister, the Hon. Austin Bramble sent a message reading as follows"

"In the existing troubled world situation, 'food and nutrition' is a subject of particular concern not only to food producers and nutrition experts but to every citizen of every country. But to the people of a country like Montserrat which has been importing huge proportions of its food, the subject is of extremely critical importance at this time.

"This is so because most of the expensive imported foods can be replaced by much cheaper, more nutritious and healthier foods which can be produced locally. If the production of local food were accompanied by knowledge of food values and nutrition requirements, the population could feed itself better and cheaper thus achieving at the same time better health, a much needed reduction of the cost of living and an increase in the territory of the Gross National Product.

"As a matter of fact, there are real signs that, whether we like it or not, in future we may well be forced to rely to a much greater extent on our own production of food. In this situation, it is imperative that keen attention be given to studying and understanding every aspect of food and nutrition in order to ensure the maximum and optimum use of the things which we can produce. Our health and survival may depend on this."

The timing of Nutrition Week proved most appropriate as Miss Viola Horsham had just arrived from Trinidad to take up her duties as a Government Nutrition Officer

ST. LUCIA NATIONAL FOOD AND NUTRITION SURVEY

Four weeks were spent by DCN students and staff in St. Lucia carrying out with Government colleagues a National Food and Nutrition Survey of that country. The survey went very well and everyone enjoyed themselves while learning much practical information and working hard. The visitors were made to feel very much at home in St. Lucia.

A very large amount of information was collected encompassing nutritional status, anaemia, food consumption, income and expenditure patterns, food costs, home food production and knowledge, attitudes and practices with regard to many aspects of food and nutrition.

The results were all collected on precoded forms. They are now being transferred to computer cards and will then be analysed with the help of a computer on the UWI Campus at Mona. The findings are all confidential, the only information on individuals or households being divulged being anaemia. Anyone found to have anaemia will be contacted and helped.

When the survey results have been analysed they will be discussed at a technical workshop in St. Lucia later this year. It is hoped that they will prove useful in Government planning.

CAJANAQUOTE

"Supply and demand for food is a local matter"

*Sir Joseph Hutchinson in his book
'Farming and Food Supply: The
Interdependence of the countryside
and town.'
(Published by Cambridge University
in 1972).*

LETTERS TO THE EDITOR.

From Mrs. Andre G. van Veen, 122 West Upland Road, Ithaca, N.Y. 14850, U.S.A.

Dear Sir:

"Whatsoever was the father of a disease,
an ill diet was the mother"

This is with reference to the April-June 1973 issue of 'Cajanus'. I am very interested in the "Cajanaquote" of George Herbert on page 76: "Whatsoever was the father of a disease, an ill diet was the mother." I have tried unsuccessfully to trace this and would be grateful if you would send me the appropriate reference.

Thank you.

Yours sincerely

(Mrs.) Andre G. van Veen

14 August 1973

EDITOR'S NOTE

George Herbert (1593-1633) was an English metaphysical poet. The "Cajanaquote" was taken from page 39 of "Mother and Child Health" by Cicely Williams and D. B. Jelliffe.¹ However, neither this source nor any other that your editor could find gave the references to this particular saying.

Dr. Williams had given her copy of Herbert to her great niece Sarah, a sixth form student. Your editor wrote to Sarah Williams who replied, sending photocopies (reproduced on page 36). I quote from her letter:

"I wonder if you know that it was one of the few books she (Cicely Williams) was allowed to keep by the Japanese when she was imprisoned during the war, and hence the Japanese stamp on it.

"The copy is I think a first edition and the quotation is to be found on the fourth line from the bottom on the right hand page of the two I am sending you copies of. The publisher as you can see from the copy of the title page is Rivingtons and the date 1871. On the outside cover of the book is just 'Poems and Proverbs' and at the bottom 'George Herbert'.

"As to your question about whether Herbert composed or just collected the proverbs, this I find more difficult. Certainly some of the ideas were not his own, for example:

'For want of a nail the shoe is lost, for want of a shoe
the horse is lost, for want of a horse the rider is lost.'

¹Published in 1972 by Oxford University Press.

But the words may well be his own; about this I can find no certainty either way, but personally would come to the conclusion that on the whole the proverbs were a collection - some rephrased with perhaps a few ideas of his own."

From Mrs. Sadie Campbell, Principal Scientific Research Officer, Scientific Research Council, P.O. Box 502, Kingston, Jamaica.

Dear Sir:

"Safe levels of nutrient intake"

On page 262 of the October-December 1973 issue of 'Cajanus', safe levels of intake of protein are quoted for different age groupings. As you are probably aware the figures in current use in Jamaica are those of Prof. Waterlow's calculated in 1969-70.

Do the other nutrient values still hold good? If not we would welcome an updated table.

Yours sincerely

(Mrs.) Sadie Campbell

18 February 1974

THE
ENGLISH POEMS

OF
George Herbert

TOGETHER WITH HIS
COLLECTION OF PROVERBS

ENTITLED
Iacula Prudentum

RIVINGTONS
London, Oxford, and Cambridge.
1871

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Iacula Prudentum

He that follows the Lord hopes to go before.
He that dies without the company of good men puts
not himself into a good way.
Who hath no head needs no heart.
Who hath no haste in his business mountains to
him seem valleys.
Speak not of my debts unless you mean to pay them.
He that is not in the wars is not out of danger.
He that gives me small gifts, would have me live.
He that is his own counsellor knows nothing sure
but what he hath laid out.
He that hath lands hath quarrels.
He that goes to bed thirsty riseth healthy.
Who will make a door of gold must knock a nail
everyday.
A trade is better than service.
He that lives in hope danceth without music.
To review one's store is to mow twice.
Saint Luke was a saint and a physician, yet is dead.
Without business, debauchery.
Without danger we cannot get beyond danger.
If gold knew what gold is, gold would get gold, I wis.
Health and sickness are men's double enemies.
Little losses amaze, great tame.
Choose none for thy servants who have served thy
betters.
Service without reward is punishment.
If the husband be not at home, there is nobody.
An oath that is not to be made is not to be kept.
The eye is bigger than the belly.
If you would be at ease, all the world is not.
Were it not for the bone in the leg, all the world
would turn carpenters (to make them crutches).
If you must fly, fly well.
All that shakes falls not.
All beasts of prey are strong or treacherous.

John J. Williams
to the much loved
Handson. Sh. 1871

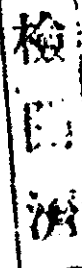
POEMS AND PROVERBS

OF
George Herbert

Cicely Williams

Easier 1922.

Sarah Fidelia Williams
from Cicely Williams
1920.



Iacula Prudentum

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If the brain sows not corn, it plants thistles.
A man well mounted is ever choleric.
Every one is a master and servant.
A piece of a church-yard fits every body.
One mouth doth nothing without another.
A master of straw eats a servant of steel.
An old cat sports not with her prey.
A woman conceals what she knows not.
He that wipes the child's nose kisseth the mother's
cheek.
Gentility is nothing but ancient riches.
To go upon the Franciscans' hackney; *i.e.* on foot.
Amiens was taken by the fox, and retaken by the lion.
After death the doctor.
Ready money is a ready medicine.
It is the philosophy of the distaff.
It is a sheep of Beery, it is marked on the nose:
applied to those that have a blow.
To build castles in Spain.
An idle youth, a needy age.
Silk doth quench the fire in the kitchen.
The words ending in "*ique*" do mock the physician;
as hieutique, paralitique, apoplectique, lethar-
gique.
He that trusts much obliges much, says the Spaniard.
He that thinks amiss concludes worse.
A man would live in Italy (a place of pleasure), but
he would choose to die in Spain (where they
say the Catholic religion is professed with great-
est strictness).
Whatsoever was the father of a disease, an ill diet
was the mother.
Frenzy, heresy, and jealousy, seldom cured.
There is no heat of affection but is joined with some
idleness of brain, says the Spaniard.
The war is not done so long as my enemy lives.

NUTRITION MADE SIMPLE

THE NATURAL WAY- Cynthia Williams*

His skin glows, his eyes sparkle, he is all smiles and gurgles and seems generally contented with the discoveries he is making of his surroundings. That is the happy picture of a healthy breast-fed baby.

For a healthy, bouncing child like this, mother's milk is the answer. Start baby on breast milk as soon as possible after birth and keep him on it for at least nine months.

There is no satisfactory substitute for breast-feeding which has emotional and physical benefits for both mother and child. It fosters a certain tenderness between them which no bottle can offer.

"Mother's milk not only supplies all the nutrients baby needs but protects him from illnesses including polio and measles although it is still important for him to get inoculations", says Ministry of Health Nutrition Officer, Eileen Gordon.

In a joint study conducted by the Ministry of Health and the Caribbean Food and Nutrition Institute in 1970 it was found out that more Jamaican children are becoming malnourished at an earlier age. Whereas the average age was nine months there have been cases of one-month-old malnourished babies.

They are usually suffering from marasmus or kwashiorkor. The marasmus child looks like a little old man, with a big head and huge eyes, wrinkled face and a tiny body. The kwashiorkor is bloated, not fat just full of water and has silky red hair. He is very quiet and could be mistaken for being just fat and well-behaved.

The Tropical Metabolism Research Unit at the U.W.I. has discovered that the most effective treatment for a malnourished child is a high calorie diet of milk and peanut oil.

But as the old saying goes prevention is better than cure, and with the right feeding habits the nation could see an end to malnutrition.

Too many mothers think it degrading to breast-feed their babies. To them it is a symbol of prestige to walk into a supermarket and pick up a tin of powdered milk and a couple bottles of baby food. But what they don't realise is that they are depriving their child of the best form of food which is so much cheaper than the costly, less nutritious stuff.

**This article first appeared in "Food and Shopping" in the Jamaica Daily News "Home Making Guide" of 23rd January 1974. The front page was entirely taken up by a picture of a mother breastfeeding her baby with the caption "The Natural Way."*

Bottle foods are about ninety percent water. Some mothers have to so stretch the tinned feed to last twice as long as it should. In these cases the child is getting a lot of water and very little food.

Of course some mothers offer the flimsy excuse that their breasts do not yield enough milk.

"But this is their own doing, because the more you breast-feed your child, the more milk is produced. And for every bottle you give the child, that less milk is produced by the breast", Mrs. Gordon said.

As long as breast-feeding goes well, a mother does not have to bother about any other feeds for her baby until he is about four months old. Then he may be given fruit juices, cereal, porridge and other cooked foods. A six-month-old can get what the rest of the family is getting as long as his share is taken from the pot before pepper or any harsh seasoning is added.

Yes, baby can even have banana, yam, breadfruit, mackerel, chicken, pumpkin, calaloo, rice and peas and ackee and saltfish. Just crush the food into a manageable form.

A mother should not feel that she has to feed her baby by the clock, that is, at special times or every three or four hours. Each baby is different, and although his brother and sister liked being fed at special times, he might not be this "disciplined." But it does not take long for him to settle down to a routine which suits both him and mother.

In a case of diarrhoea the doctor might recommend that baby be fed just glucose and water. Take caution and never keep the child on this diet longer than thirty-six hours even if the bout of diarrhoea continues. A diet of only water and sugar could lead to malnutrition.

Gastroenteritis is a common illness among bottle-fed babies because it is so difficult to keep bottles sterilised - there are so many flies and mosquitoes - or because feed has been mixed with contaminated water. A child suffering from gastroenteritis is more susceptible to malnutrition because he is unable to retain his food.

Refrain from giving babies bush teas. Bushes which are not harmful to adults could do damage to babies' delicate systems.

There is no need to give your child expensive vitamin C and D formulas, because the sunshine, fresh air and fresh foods supply these essential vitamins.

But as man cannot live by bread alone so baby cannot live by feed alone. He needs a warm bath each day. Avoid using soap on his face because it could be very irritating if soap gets in his eyes. Instead use a damp cloth and gently wipe his face. With a soft towel gently dry baby then dab on a little powder. Never shake powder on him because it could be harmful if breathed in.

It is not necessary to apply oil or powder after every diaper change - a combination of sunlight and fresh air is the best thing for clearing up diaper rash.

Both mother's and baby's nails should be kept short and clean to prevent scratching and to control the spread of germs.

Talk to baby, remember he is a little human being and can get bored. He can't sleep all the time so he needs the stimulation of a few toys.

But most of all he needs mother's love and attention.

PREPARING FOOD FOR BABY - *Cynthia Williams*

Feed baby on breast milk for as long as you can but as he grows older add other foods. A four-month-old can have porridge and fruit juice while a six-month-old can have what the rest of the family is having, as long as his share is taken from the pot before pepper is added. Here are a few ways to prepare baby's food:

GUAVA JUICE

- 1. *guava*
- 3 *tbsps. water*
- 2 *tsps. brown sugar*

PREPARATION:

Peel guava then crush fruit and rub through strainer. Mix one tablespoon strained guava with three tablespoons cooled, boiled water and sweeten with two teaspoons of brown sugar.

SOURSOP JUICE

- 1 *large soursop*
- 2 *cups cold water*
- Sugar or condensed milk*

PREPARATION:

Remove skin from soursop and soak in two cups of cold water then rub through strainer. Sweeten with four teaspoons of brown sugar for each cup of juice. Instead of sugar, condensed milk may be used to sweeten soursop juice as follows: One tablespoon sweetened condensed milk to seven tablespoons soursop juice.

RICE AND PEAS

4 *tbps.* cooked mashed rice
 2 *tbps.* cooked mashed red peas
 2 *tbps.* boiled water
 1 *tsp.* butter

PREPARATION:

Mix red peas with water and rub through strainer with a wooden spoon, then add to butter and rice.

SWEET POTATO, MILK POWDER AND CHEESE DINNER

4 *tbps.* cooked mashed sweet potato
 2 *tsp.* milk powder
 1 *tbps.* grated cheese
 2-3 *tbps.* water in which sweet potato was cooked

PREPARATION:

Mix milk powder in cooled boiled water. Add mashed sweet potato add cheese and rub through strainer with wooden spoon.

GREEN BANANA, MACKEREL AND CALALOO

4 *tbps.* cooked mashed green banana
 1 *tbps.* crushed (tinned mackerel)
 2 *tbps.* of calaloo water

PREPARATION:

Mix banana, mackerel, calaloo and water and rub through strainer with wooden spoon.

Feed baby the amount of dinner mixture to match baby's age:

6 months - 2 tablespoons mixture
 7 months - 4 tablespoons mixture
 8 months - 6 tablespoons mixture
 9-12 months - 6 to 8 tablespoons mixture

As baby grows, his food can be crushed with a fork rather than being rubbed through a strainer.

Baby's meals for a day should look like this:

Early morning: Breakfast

Mid-morning: Thick porridge ($\frac{1}{2}$ cup); breastmilk

Mid-day: $\frac{1}{4}$ cup fruit juice; biscuits

Afternoon: Breastmilk

Evening: Dinner made from a mixture of foods taken from dinner cooked for family; breastmilk

Night: Breastmilk.

CAJANAQUOTE:

The hospital looks after the patient for two to three weeks but the relatives look after him for a lifetime.

*Student nurse
(What she learnt from her training in
the community).*

VALUE FOR MONEY (ENERGY AND PROTEIN) OF BASIC FOODS
IN JAMAICA, BARBADOS AND GUYANA*

by

*Ann Ashworth, D. Grant, Joan Irons, P. Jahoor,
Elaine Knight, Patricia Thorbourne and F. Young***

In 1968 Dr. John McKigney published figures which showed the cost of providing 1,000 calories and 20g protein from a wide selection of foods.¹ Prices were obtained from nine Caribbean countries and an average taken. Such information is essential, especially for anyone who is responsible for giving nutritional advice to mothers with extremely limited financial resources.

Obviously there have been considerable price increases since 1968: some prices have risen more than others so that the foods which were "best buys" may not necessarily be so now.

At the Tropical Metabolism Research Unit we routinely up-date these figures for our own guidance and readers of 'Cajanus' may be interested in our latest revision for Jamaica, Barbados and Guyana.

The prices of several foods are under Government control and these controlled prices have been used wherever possible. Costs of other foods in Jamaica were obtained from Lane Supermarket, the Agricultural Marketing Corporation and a beef shop all in the Liguanea area, St. Andrew; and for Barbados from Rick's Supermarket and Golden Grove Vegetable and Meat Ltd. in St. Philip. The majority

*Editor's Note: Comparison with previous prices can be made by looking up Miss Isabel Foster's article "Comparative Prices of Foods in Four Caribbean Countries" ['Cajanus', Vol. VI, (1973), 37-39], and Dr. Gurney's and Dr. Cook's article, "The Price of Groceries in the Caribbean 1972-1973" ['Cajanus', Vol. VI, (1973), 40-44].

**From the Tropical Metabolism Research Unit of the University of the West Indies.

Table 1: Jamaica (December 1973)

Commodity	Price/ lb.	g. protein/ 10 cents (Jam.)	Commodity	Calories/ 10 cents (Jam.)
Cornmeal (counter)	9¢	48.4	Dark sugar (8¢)	2115
Gungo peas (dry)	24¢	36.3	Cornmeal (counter)	1808
Dried skim milk	47¢	34.7	Rice	1394
Canned mackerel (15 oz.)	24¢	34.2	Cornmeal (pkt.)	1179
Red peas (imported)	32¢	31.2	Wheat flour (counter)	1100
Wheat flour (counter)	15¢	30.0	Unrefined oil (40¢/pt.)	1002
Cornmeal (pkt.)	14¢	29.7	Dawn condensed milk	907
Rice	12¢	28.0	Refined oil (45¢/pt.)	891
Dawn condensed milk (14 oz.)	14¢	22.9	Gungo peas (dry)	712
Saltfish (85% edible) (40% water)	\$1.22¢	22.0	Lard (29¢/½ lb.)	662
Wheat flour (pkt.)	25¢	20.4	Wheat flour (pkt.)	660
Cheese	62¢	18.2	Margarine (50¢)	653
Carnation DSM	\$1.02¢	16.0	Green banana	638
Cremo milk (pt.)	15¢	15.9	Nestle condensed milk	552
Sardines (3¼ oz.)	12¢	15.8	Red peas (imported)	478
Beef stew (85% edible)	45¢	15.4	Foska oats	454
Macaroni (14 oz.)	33¢	14.7	Macaroni	444
Nestle condensed milk (14 oz.)	23¢	13.9	Yam	400
Peanut butter (14 oz.)	75¢	13.8	Dried skim milk	347
Tripe	65¢	13.3	Canned mackerel	324
Chicken neck and back (51% edible)	30¢	12.3	Peanut butter	305
Gloria evaporated milk (14½ oz.)	25¢	11.5	Crackers	292
Callaloo (69% edible)	10¢	11.0	Cheese	283
Red peas local (pt.)	80¢	10.7	Breadfruit	254
Liver	90¢	9.9	Beef stew	244
Foska oats (14 oz.)	39¢	8.4	Sardines	239
Chicken whole (73% edible)	59¢	8.3	Gloria evaporated milk	228
King fish (95% edible)	85¢	7.8	Cornflakes	226
			Cremo milk	197

Table 1: Jamaica (December 1973 contd.)

Commodity	Price/ lb.	g. protein/ 10 cents (Jam.)	Commodity	Calories/ 10 cents (Jam.)
Eggs (doz.)	95¢	7.2	Irish potato	166
Breadfruit (70% edible)	6¢	6.9	Red peas (local)	164
Crackers (4 oz.)	15¢	6.1	Carnation DSM	160
Green banana (64% edible)	15¢	5.9	Callaloo	122
Yam (86% edible)	18¢	5.1	Chicken necks and backs	119
Irish potato (85% edible)	19¢	4.0	Eggs	92
Cornflakes (12 oz.)	58¢	4.3	Tripe	70
Green gungo (pt.)	70¢	3.9	Liver	67
Cabbage	30¢	1.7	King fish	56

Table 2: Barbados (January 1974)

Commodity	Price/ lb.	g. protein/ 10 cents (Barb.)	Commodity	Calories/ 10 cents (Barb.)
Split peas (pt.)	54¢	20.3	Dark sugar (19¢)	890
Pigeon peas (pt.)	50¢	17.4	Margarine (56¢)	583
Dried skim milk	\$1.12¢	14.6	Cornmeal	550
Black eye peas (pt.)	76¢	14.4	Wheat flour (counter)	344
Saltfish (85% edible) (40% water)	\$2.00¢	13.4	Pigeon peas	342
Cornmeal	30¢	11.9	Soda biscuits	321
Wheat flour (counter)	48¢	9.9	Rice (counter)	305
Cheese	\$1.24¢	9.1	Split peas	292
Macaroni	65¢	8.7	Wheat flour (pk.)	264
Sardines (3½ oz.)	26¢	7.8	Macaroni	257
Wheat flour (2 lb. pk.)	\$1.25¢	7.6	Condensed milk	254
Red herring	\$1.40¢	7.2	Cooking butter (\$1.53)	212
Liver	\$1.30¢	6.9	Black eye peas	203
Soda biscuits	62¢	6.7	Dried skim milk	146
Chicken back (51% edible)	55¢	6.7	Quaker oats	144
Evaporated milk (6 oz.)	18¢	6.6	Cheese	142
Condensed milk (14 oz.)	50¢	6.4		

Table 2: Barbados (January 1974 contd.)

Commodity	Price/ lb.	g. protein/ 10 cents (Barb.)	Commodity	Calories/ 10 cents (Barb.)
Corn beef (12 oz. tin)	\$1.34¢	6.4	Yam	136
King fish (95% edible)	\$1.50¢	6.2	Evaporated milk	130
Canned mackerel (7 oz.)	62¢	6.2	Sweet potato	125
Dolphin (95% edible)	\$1.50¢	5.8	Sardines	119
Rice (counter)	54¢	5.6	Green banana	106
Quaker oats (17½ oz.)	\$1.35¢	5.2	Irish potato	105
Stew beef (85% edible)	\$1.76¢	4.0	Cornflakes	96
Chicken whole (73% edible)	\$1.53	3.9	Pork ribs and flaps	95
Mutton (85% edible)	\$1.60¢	3.7	Mutton	70
Pork ribs and flap (65% edible)	\$1.16¢	3.1	Red herring	68
Yam (86% edible)	30¢	3.1	Chicken back	65
Eggs (doz.)	\$2.54	2.7	Canned mackerel	58
Pork chops (70% edible)	\$1.60¢	2.6	Corned beef	54
Irish potatoes (85% edible)	30¢	2.2	Saltfish	54
Cornflakes (12 oz.)	\$1.36¢	2.0	Pork chops	53
Sweet potato (83% edible)	35¢	1.4	King fish	45
Green banana (64% edible)	5¢	1.3	Eggs	35
Cabbage	80¢	0.9	Pumpkin (53% edible 40¢)	18
			Cabbage	10

Table 3: Guyana (January 1974)

Commodity	Price/ lb.	g. protein/ 10 cents (Guy.)	Commodity	Calories/ 10 cents (Guy.)
Split peas	30¢	36.6	Dark sugar (13¢/ 2 lb.)	2603
Dried skim milk	46¢	35.5	Wheat flour	1196
Wheat flour	14¢	34.5	Rice	1176
Rice	14¢	21.7	Cooking oil (38¢/qt.)	1055
Black eye peas	68¢	16.1	Lard (61¢)	630
Chick peas	53¢	15.6	Margarine (58¢)	563
Red beans	68¢	14.7	Split peas	526
Foska oats (8 oz.)	29¢	11.1	Dried skim milk	355
Egg noodles	60¢	9.7	Chick peas	312
Cheese	\$1.44¢	7.9	Cassava	308
Ideal evaporated (14½ oz.)	38¢	7.6	Foska oats	305
Condensed milk (14 oz.)	47¢	6.8	Egg noodles	293
Beef	\$1.60¢	5.3	Condensed milk	270
Eggs (doz.)	\$1.50	5.2	Green plantain	258
Liver	\$1.90	4.7	Sweet potatoes	244
Yam (86% edible)	20¢	4.7	Eddo	244
Eddo (82% edible)	16¢	4.2	Black eye peas	228
Milo	\$1.59¢	3.9	Red beans	225
Chicken whole (73% edible)	\$1.60¢	3.7	Yam	205
Tannia (80% edible)	24¢		Tannia	201
Sweet potato (83% edible)	18¢	2.7	Ripe banana	201
Cassava (75% edible)	16¢	2.6	Ideal evaporated milk	149
Ripe banana (64% edible)	14¢	2.5	Milo	123
Green plantain (69% edible)	16¢	2.4	Cheese	122
Irish potato (85% edible)	35¢	2.2	Irish potato	90
Pumpkin (53% edible)	10¢	1.4	Pumpkin	72
Cabbage	46¢	1.1	Eggs	65
			Beef	64
			Chicken	57
			Cabbage	17

of foods reported for Guyana were price controlled, the prices of the remainder being obtained from the Government Marketing Corporation, Georgetown. The period of study was mid-December 1973 for Jamaica, and early January 1974 for Barbados and Guyana.

Value for money has been expressed in terms of the number of Calories and the grams of protein² which would be provided by ten cents local currency.

Food costs in the three countries can be compared by multiplying the prices/lb. in Barbados by 0.42 (1 Barbadian dollar = 42 cents Jamaican) and by multiplying the prices/lb. in Guyana by 0.38 (1 Guyanese dollar = 38 cents Jamaican).

Prices in Jamaica and Barbados were similar, whilst those in Guyana were substantially less.

References

1. McKigney, J.I. (1968) *J. trop. Ped.* 14, 55.
2. C.F.N.I. Food Composition Tables 1973 (provisional).

GUEST EDITORIAL

BETTER FOOD FOR A HEALTHIER WORLD.*

The world is rich but not making good use of the wealth within its reach. Millions live in the shadow of chronic hunger and malnutrition, while others eat too much and are thus malnourished in a different sense.

In the tropics and sub-tropics, severe protein-calorie malnutrition affects about eleven million children, moderate protein-calorie malnutrition about seventy-six million. Severe cases would need treatment urgently, but even for the few who are treated, it often comes too late. In mild to moderate cases, children show retarded growth and their ability to learn is impaired, which in turn is an indirect obstacle to economic development.

A number of serious deficiency diseases are still with us: vitamin-A deficiency, resulting in blindness or death; nutritional anaemias; endemic goitre and cretinism; and rickets, common in some sub-tropical countries.

By contrast, overeating and eating the wrong foods are partly responsible for the steady rise in metabolic disturbances and diseases of the heart and blood vessels.

Since there is already so much knowledge about nutrition, and since good health is so important for human achievement, much more can and must be done; at the very least, widespread deficiency diseases should be made to disappear. The attack against malnutrition must be stepped up through education, agriculture and food policies, as well as through health measures. Each of us can find out about food in order to protect our health as best we can, and help the members of our family to do the same.

The theme of World Health Day 1974 is "Better Food for a Healthier World." I hope that this will stimulate action against deficiency diseases but also against luxury diseases, and bring wider understanding that we need better food for a healthier world.

Dr. H. Mahler
Director-General
World Health Organization

*This is taken from Dr. Mahler's message for World Health Day.

TOPICS AND COMMENTS

MALNUTRITION AND THE BIOLOGY OF EXPERIENCE

By D. A. Lovitsky*

It has recently been suggested that one of the major effects of early malnutrition on animals is that it functionally isolates them from their environment. It is further postulated that since learning about the environment is a continual feature of development, such an isolation may produce retardation in cognitive abilities. To test this hypothesis, several studies were performed on both dams and pups. It has become clear that malnutrition isolates an animal from its environment in at least four ways. First, malnutrition early in life produces a delay in motor development inhibiting the animal from exploring its environment. Second, malnutrition of the dam during lactation produces responses in her such as to delay the development of exploratory behavior of the pups. Third, the young malnourished animals appear to avoid novel objects in their environment, whereas normally fed young animals will typically be attracted to novel stimuli. Finally, malnutrition blocks certain kinds of learning experience which take place in new environments. In any new situation, an animal learns many things about its environment which are not directly reinforced. This is referred to by psychologists as "incidental learning" or "latent learning".

The effect of malnutrition on latent learning was demonstrated in the following study. Young rats were placed in a ten choice maze with neither food nor water. Weeks later the animals were made hungry and food was placed at the end of the maze. The animals that previously experienced the maze displayed approximately fifty percent fewer errors than animals that were treated identically but did not have the previous experience in the maze. The animals maintained on a low protein diet during the period they experienced the maze but allowed to recover before testing showed only a thirty percent improvement in errors when compared to their non-experienced controls. The study was repeated, but with shorter periods of experience and essentially the same results were obtained: forty percent savings in the experienced well-nourished group and only twenty percent in the experienced well-nourished group exposed to the maze under conditions of a low-protein diet.

Although the administration of a low-protein diet produces many effects in the central nervous system, it is known to depress the levels of the neurotransmitter, serotonin. This chemical has been implicated in the effects of psychoactive drugs and schizophrenia. The next study attempted to manipulate only this transmitter substance and examine its effect on latent learning. Three groups of rats were given experiences in the maze. One group received a saline injection before entering the maze. The second group received an injection of a drug, p-chlorophenylalanine (pcpa) before exposure. This treatment has been shown by others to produce between sixty and eighty percent decreases in brain serotonin. The third group received pcpa plus an injection

*From the Annual Report for 1972/73 of the Graduate School of Nutrition, Cornell University, USA.

of a 5-hydroxytryptophan, the immediate precursor to serotonin. This has been found by others to prevent the depression of serotonin produced by pcpa. The results showed clearly that the effects of the experience in the maze are inhibited under conditions of low serotonin levels.

It should be noted that many drug and nutritional variables affect brain serotonin levels. The implications from these and further studies may be very important to our understanding of a larger role nutrition may play in affecting behavior and behavioral development.

MILK INTOLERANCE AND LACTOSE INTOLERANCE

*By Vinodini Reddy**

Milk contains sugar in addition to protein and fat. The sugar is known as lactose. The enzyme required for the digestion of lactose is known as lactase. When a person drinks milk, the sugar is digested and absorbed through the intestines with the help of this particular enzyme. Some people do not have sufficient amounts of this enzyme. So they cannot tolerate milk. They develop symptoms like abdominal pain and diarrhoea after drinking milk. This is described as milk intolerance. An individual's capacity to digest milk sugar is generally tested by giving a dose of pure lactose. If a person develops symptoms after taking a dose of lactose, he is said to have lactose intolerance.

Studies on Asians

Recently there have been some doubts raised regarding the use of skim milk in nutrition programmes. A few studies have been reported from America and Australia based on investigations on people from different parts of the world. It has been found that people of certain races like Indians, Indonesians, Thais and almost all Asians have low levels of the enzyme lactase required for the digestion of milk sugar, as compared to Americans. Most of them developed symptoms of intolerance after taking a dose of lactose. In view of these observations, doubts have been raised regarding the use of milk for improving the nutrition of children in developing countries (because it may induce diarrhoea and cause harm instead of benefiting the children). However, the research carried out at the National Institute of Nutrition, Hyderabad, has shown that this is not true. The enzyme levels are normal in infants and young children. But as they grow up, the enzyme decreases and in adults, levels are low compared to Americans. Some of them developed symptoms after taking a dose of lactose but did not have any symptoms after drinking a glass of milk.

*Taken from 'Milk in Human Nutrition - Some Recent Findings'. Published in *Nutrition*, 7, 17-26 (National Institute of Nutrition, Hyderabad, India).

These studies show that lactose intolerance does not necessarily imply milk intolerance. The explanation for this discrepancy is, the dose of sugar used for the test is very large. It is the amount present in one litre of milk. A person who shows an abnormal test cannot drink one litre of milk at a time. But in practice nobody consumes this much of milk at a time. So this abnormal test may not have practical relevance.

Reasons for Low Enzyme Levels

The question may be raised as to why the enzyme levels are low in Asians. There are two theories to explain this. Firstly, it may be related to milk intake. During the first year of life, an infant depends mostly on the breast-milk. Thereafter, a child may get some amount of cow's milk or buffalo's milk. But as the child grows up the milk intake goes down. Adults in our country drink very little milk and that too in the form of tea, coffee or curds. So there is no need for such high levels of enzyme as in infants. That may be the reason why the enzyme levels are low in Indian adults. On the other hand, in Western countries even adults drink large amounts of milk. So the enzyme levels continue to be high.

The other theory is that the enzyme may be genetically determined. So the enzyme levels may be high in certain races and low in others. Whatever the reason may be, the practical point to be remembered is that though the levels are low in Indians, the enzyme present is sufficient to digest the sugar present in one glass (eight ounces) of milk. One can take even a litre of milk per day if he limits his intake to one glass at a time.

No Cause for Worry

In most nutrition programmes the amount of milk given to a child rarely exceeds a glass at a time and hence there is no risk of producing diarrhoea. Therefore there is no need to discourage milk feeding programmes because of the high incidence of lactose intolerance in our population. Thus the studies carried out at the National Institute of Nutrition, Hyderabad, have thrown a new light on the problem of lactose intolerance.

Milk is one of the excellent foods we have, and it is hoped that by increasing the production and consumption of milk, the nutritional status of our population especially child population can be improved significantly.

RESOURCE RECOVERY FROM FOOD WASTE*

By F. Bennett** and L. Lash***

A concept that is rapidly gaining favour in environmental control is the treatment of effluent not for the sole purpose of disposal but with a view to recovering useful and salable by-products.

Successes in this area are few in number but startling in their impact. Not many years ago, the grain fermentation industry discarded spent fermentation media after the alcohol was distilled from it. The impact on the receiving bodies of water was devastating. Now these solids are recovered and sold as animal feeds and the streams are spared the impact of the high strength wastes.

Whey treatment and recovery is another area where the potential of product recovery is great. The technical know-how exists to extract a variety of salable products, from protein to lactose. Reverse osmosis is a new technique being applied to these whey waste streams as well as in other unique applications such as the concentration of spent sugar solutions used in cherry processing.

Waste water collection, renovation and re-use is gaining wide acceptance in the technologically developed countries not only as a method of saving the environment but also as an economic raw material that is cheaper than developing new sources.

Virtually all governments of industrialized countries are promulgating strong legislation governing the discharge of poorly treated waste water effluents into rivers and streams. The net result is that industry faces large investments in treatment plants, investments that could cost as much as twenty-five percent of the capital cost of the manufacturing plant itself. The governments of developing countries are also beginning to look askance at pollution.

Fortunately, the basic concepts that have governed waste treatment in the past are being challenged. Two questions of note are being asked:

- (1) *must end-of-the-pipe treatment be accepted or can process changes be made to avoid manufacturing the pollutant in the first place?*

*This piece is an excerpt in the L.I.F.E. Newsletter taken from a paper entitled as above and presented at the Fifth Interamerican Congress of Chemical Engineering, Rio de Janeiro, Brazil, July 22-28, 1973.

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(2) *can waste streams be considered as misplaced resources and looked at as having potential for recovery of salable by-products?*

The latter concept is considered here: waste streams can be considered as zero cost raw materials and that recovery of by-products from these streams may provide a reasonable return on investment of the equipment installed to effect their separation. An attack can be made simultaneously and profitably on the increasing pollution of our environment and the decreasing availability of food.

Writing about the food industry, Ben-Gera and Kraner state: "Waste utilization is both a necessity and a challenge. In the food industry, the recovery and modification of waste is becoming increasingly important. The aim is complete utilization of the raw material and minimization of the problem of pollution and waste treatment. With the increase in world population and the existing shortage of high-quality, low-cost foods, recovery of nutrients from presently wasted sources and their utilization as food or feeds will help limit the gap between the world population and world food supplies."

There are numerous examples of situations where at one time the effluent was discharged at no little insult to the environment - but upon examination the pollutants in that waste water stream proved to be too valuable to throw away. The recovery of dried feed grain in the beverage alcohol industry is a case in point. Whey treatment and recovery is another. Virtually all new large cheese production plants are considering treating whey as an effluent for recovery of by-products. Reverse osmosis is an example of the newest technology that provides one solution to this problem of effecting the recovery and processing of product remnants otherwise wasted.

Pressure on food producers has generated a parade of processes that produces usable edible materials for both animals and humans. These processes range from simple recovery and drying to microbial conversion to protein. The system, the opportunity and the processes are all unique.

CAJANAQUOTE

"To a Chinese or a Japanese, drinking tea and eating food are not merely matters of nourishment or of meaningful companionship, they are also considered occasions for artistic appreciation of nature. Therefore, the landscape you look at while eating, the room in which you serve your meal, as well as the tableware you use and the food itself, must suit your attitude. This appreciative attitude towards nature has been a central theme of people's lives in Japan."

Maseo Watanabe
*"The Conception of Nature in
 Japanese Culture" Science, 183,
 279 (1974).*

NUTRITION IN THE HOME

by

*Cicely D. Williams**

The quality of life depends largely on the home, and the success of the home depends largely on the nutrition it provides. Nutrition is necessary for all of us, from the most exalted scientist to the humblest foetus; from the contractor feeding an army to the solitary spinster; from the overdeveloped gourmet to the emaciated and underdeveloped starveling. It cannot or should not be taken for granted.

Nutrition matters most where the majority of people eat. In spite of the present tendency for many people to eat in cafeterias, restaurants, bars and plastic bags, it is still in the home where most of us take most of our food. We have been using food since the beginning of life, but the "science" of nutrition is a recent development, and a lot of us still get on pretty well without it.

The food must be adequate in quantity and adapted in quality to the needs of the individual.

Few of us can repeat the list of about fifty food substances which are essential and the minimum or optimum quantities for the various ages and sizes. But *all* of us can if we try learn to select and prepare a good, varied and tasty diet, at moderate cost and within a cultural pattern. Above all we must learn *how to give* the food to the young and to the vulnerable. We can all do this with little in the way of "science" but we do need the humanities.

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But every single individual has a right to this knowledge, and an abiding duty to make use of it.

The governments and the food industries have a duty and responsibility to see that food should be available. No individual or group should be so disadvantaged that they are positively unable to obtain a reasonable diet. Some may need money, or extra food supplies. But there are many who need knowledge and understanding, or encouragement and support in order to do the best for themselves and their children. Many of the babies and children admitted to hospitals with malnutrition and "failure to thrive" and preventible diseases need enlightened and sympathetic follow-up for nutrition in the home.

Much, if not most, malnutrition in the world today depends not only on the cataclysms of nature, and man-made disasters such as war and civil disorder. It depends on failure to conserve, select, distribute and prepare food. Go through the wards of any hospital in almost any country and observe how many of the cases of failure to thrive and malnutrition are due to food shortage, and how many are due to ignorance and/or carelessness.

It is therefore on domestic food and good domestic habits that the burden of good nutrition rests. In nutrition as in life, to have it more abundantly is of little benefit unless it is of good quality.

In these days, there is a great deal of emphasis on "Public Health Nutrition", on food stamps in the USA and on group feeding. But this will accomplish little unless there is individual attention to the conditions, the attitudes and to care in the homes.

Physicians and nurses and every type of aide must take the trouble to identify:

- Who are those in need or at risk?
- What is the need or the risk?
- What are the causes?

How can these needs and risks be met? We need help from dietitians, nutritionists, and scientists.

And physicians and nurses must take the trouble to define the problems and apply the knowledge of the scientists, the nutritionists and economists, and some common sense, to find the answers.

A great deal of time, money, personnel and emotion is now being spent on fertility control. But the quantity of population is not the only thing that matters - it is the quality. In Holland the density is about nine hundred people per square mile (in the USA it is about sixty). But in Holland people are healthy, educated and by no means dependent. There are some areas in the world with less than ten people per square mile. But they are by no means prosperous. Fertility control by itself does not guarantee progress.

We talk a great deal about the babies who are born with handicaps. But there are many handicaps that are produced by the environment and which can be modified by efficient child care. We should pay more attention to the quality of the environment, especially that which exists in the home.

The health services must be at pains to identify need and risk at the individual level, in their physical, mental and social implications. More research, experiment and evaluation are needed in the field of application, and in the application of the food sciences.

"Women's Lib" is wasting its time in complaining and fighting the "burdens" and "drudgery" of domestic work and child care. They would be better employed in realizing their privileges and responsibilities; in emphasizing the importance of the skills required for, and the social status inherent in these functions; and in fighting the exploitation in commercial advertising. Whether these services are given as family obligations or for commercial gain their worth and status should be recognized. It is found sometimes that the more

diminished section of a class only is relegated to "Home Economics." This is a disaster. Every child and adolescent should learn about the responsibilities of home. Domestic martyrdom is often created by domestic ignorance of home economics and child care. Everyone knows that we develop interest in the subjects in which we are skilled.

In these days of sophisticated living conditions and demands on domestic skills the young need to know about the total environment and its hazards. The educationists are still too much dominated by a celibate, or even a monastic tradition to realize the seriousness of the situation.

Dr. Jonas Salk has said the "Human purpose is a biological necessity." It is only when we admit and evaluate the importance of health and nutrition in the home that we will appreciate the fullness of human purpose. We will be emancipated from the servitude and hardships now associated with these vital functions and so enhance the quality of life.

CAJANAQUOTE

"The foods necessary for human life are as sacred as life itself."

Robespierre
Addressing the French National
Convention on 2 December 1792.

WHY ARE SOME BABIES FAT?

by

E. F. P. Jelliffe*

Cultural Attitudes Towards Fat and Obese Infants

Among many groups, a preferred "baby image" exists. Some babies are swaddled from birth; others have their heads bound in order to achieve the correct skull shape; others have their noses and fingers massaged, so that they may conform to local concepts of beauty. However, in a large number of cultures, a fat baby is considered beautiful. The noun "cherub" (angel or beautiful and innocent child) is often applied to infants with all the implied connotations of sweet, plump and dimpled flesh. In the Mexican-American sub-culture, the indulgent diminutive "gordito" specifically applies to fat babies.

In the Western culture - basically an achievement-oriented society - the concept of "Bigger Is Better" is still believed by many mothers and, although paediatricians may check the recorded weight curve of the infants under their care for inadequate weight gain, few until now, have seriously considered the upper weight limit. Many family physicians have imagined that at some time the infant would mysteriously shed his "baby fat" as he developed, it has been an accepted erroneous tenet that overfeeding a rapidly growing infant was impossible.

Maternal attitudes, however, play the most important role in determining the size of the baby after birth. Babies often become fat because of a loving and overprotective mother who wishes to pamper her offspring. This attitude

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is common among women who have lost previous children who were either born dead or who died in early infancy; such a mother may feel that the extra measure of milk in the feed and the added sugar or spoonful of cereal can but strengthen the child, improve his growth rate, and render him more resistant to childhood infections.

Frequently there is a sense of pride which urges the mother to keep up with the "Jones' baby", her child must be as well cared for and plump as the neighbour's child. This attitude forms part of a display phenomenon whether the child is seen in its home surroundings, or out on the street, it is important that he should be admired. In most societies, a thin baby may be thought to be ugly or ailing, and the mother is automatically blamed for the condition. In many countries, however, the proud mother will take careful precautions against the "evil eye" - the baby wears amulets or his eyes are lined with *kohl*.

Mothers often believe that a baby who cries must be demanding food, and unnecessary early feeds of a high caloric value are forced on the unresisting infant who may only be thirsty. Pressures of modern living and the nuclear family pattern may lower the threshold of tolerance of a mother to the cry of the infant and many find the best way to silence the child is to feed him. Overfeeding is often promoted by midwifery and nursing personnel as well as overzealous relatives, such as grandmothers, who equate a "bonny baby" with a fat child. An important factor in infantile obesity is the lack of knowledge of many mothers, especially the teenage mothers, regarding the nutritional requirements of their infants. Fundamentally, much of the blame must be attributed to the minimal amount of nutrition education given to mothers in pre-natal and postnatal clinics by physicians and nurses, who are themselves ill-informed on nutritional matters.

Psychological Considerations

The psychological implications of obesity have been studied by social psychologists and other behavioral scientists, including child psychiatrists.

Food in all cultures symbolizes many things to many groups. It forms part of many secular or religious rituals. It signifies a loving bond between two or more persons, as well as being essential for the maintenance of life. In many cultures, taboos and *rites de passage* are linked with many foods.

Psychoanalysts have viewed the oral period of development as a vital stage when emotional awakening begins and the infant is totally dependent on his mother or mother surrogate to supply him not only with water and food, but tenderness, protection and warmth. Since his sudden expulsion from the secure comfort of the uterus, his first contact with the world at large should be with his mother, enjoying bodily contact, rooting with his mouth for her nipple and receiving from her the warm nourishing milk he requires. These contacts are part of a symbiotic relationship which will influence his behaviour in later years.

Ferenczi⁽¹⁾ has written about the omnipotence of the fetus, whose requirements are met in utero and who before birth does not "need to need". A brusque transition occurs after his delivery, when the newborn yearns to regain the "wishless tranquility he had enjoyed before birth."

The illusion of self-sufficiency is rapidly shattered, and Freud⁽²⁾ commenting on weaning practises states that the child "will always be left with the conviction after it is weaned that the feeding was too short and too little."

Infants cry because of hunger or thirst, but also possibly out of rage because of this betrayal. It can be imagined how explosive the rage of a bottle-fed baby can be, when he is continuously handled by different nurses in

hospital, fed by different persons with milks of different temperatures, and possibly of different tastes and consistency. There may be little chance of familiarization with a single individual, especially if the mother is tired or ill, and different nurses take over the entire feeding procedure.

Patterns of mothering have been studied in connection with feeding patterns in infants. Some mothers who themselves have been "under-mothered"⁽³⁾ are reluctant to show warmth towards their infant, but will feed the child at a distance by giving him bottle feeds. It is possible that these feeds can also be casually prepared with insufficient attention given to the specific quantities of ingredients needed by the infant. In these situations, there will be a minimal of interaction between mother and child.

The acts of "give and take" between the mother and infant should create strong bonds of affection between them. However, in certain instances, if the mother is overanxious and has a poor "let-down reflex", the child will be unable to obtain sufficient breast milk; the apparent rejection of the breast by the infant may sadden or anger the mother, who will - unless encouraged to continue breast feeding - start feeding the child with a formula which she can actually see him drink. In this situation, the mother may strive to prove herself successful in this feeding method and will increase the number of feeds or begin early introduction of semi-solid foods in the infant's diet. A mother who has failed to establish a good feeding pattern with her infant, but has noticed nursing staff efficiently feeding her child may also, after discharge from the maternity unit, feed the child with great determination at frequent intervals to prove that she is an able and conscientious mother. She may also be encouraged by her husband to do so.

In the normal process of development and learning an infant's felt needs - which he will demonstrate by crying, by movements, etc. - should

receive the appropriate response. However, in many early feeding experiences, this does not occur. Children who are fed haphazardly may early in life acquire a "disordered awareness" of bodily function and conceptional confusion. These children may develop as anxious individuals, incapable of self-assertion in a complicated world and schizophrenia may be diagnosed later in these traumatized children.

Obese subjects may also become desensitized to normal stimuli of hunger and satiety, this has been demonstrated in hypothalamic and hyperphagic animals who continue to overeat because of a lack of satiety and not as a drive for food. (4)

Studies among older children have shown that many obese children use food as a surrogate for lack of maternal affection and when they are anxious (5) and at times may eat as an outlet for aggressiveness. (6)

Many obese children are found in families in which obesity exists either among one or both parents or close relatives. This may be due to cultural dietary patterns, or when all family members have a great interest in food, which forms a bond between them.

Obesity in children may often start after a period of hospitalization, such as tonsillectomy; the child is permitted generous helpings of ice cream, high caloric cold drinks and these faulty eating habits are permitted to continue after discharge from the hospital.

Obese individuals on the whole, in whom the feeling of both hunger and satiety are blunted, will respond more easily to the sight, aroma proximity of food at any time of the day than lean individuals, and it has been postulated that obese individuals overeat for non-physiological reasons. (7)

Many children will overeat to compensate for emotional distress, for example, if there is a death, a separation or divorce in the family.

If, however, overeating in a child is frowned upon by his parents or relatives, the child may eat to assuage his anxiety, but the knowledge that he should not be doing so, will cause him further anxiety, which will then be quietened by further eating.

Bruch has suggested that family relationships⁽⁸⁾ can cause obesity in children particularly an ambivalent rejection and overprotective attitude of the mother.* Other workers, however, have agreed that psychological disorders may arise from obesity, but that overprotection without rejection can also be a common feature.⁽⁹⁾

Both parents may encourage obesity and precipitate symptoms of mental illness in the child, if they attempt to channel their disappointments or ambitions through him. A father, for example, may be annoyed that his son who is artistic by nature, has no interest in athletics, and this may engender rejection on his part. Parents may be disappointed with the sex of the child and will dress a boy as a girl; the child caught in such a traumatic and difficult situation is likely to develop schizophrenia.⁽⁸⁾

Some authors have described psychopathogenic characteristics of a disturbed body image which are felt to be specific to obesity, many obese persons may feel they may eat with impunity as they do not perceive themselves as fat

**Some mothers may not want their children and even dislike them and try to have as little physical involvement with them as possible, but they however have guilt feelings, these are often assuaged by overfeeding the child e.g. giving him sweet money (a sign of affection), sending him out to the cinema (out of the way), allowing him to raid the refrigerator for ice cream and cold foods rather than cooking a suitable meal for him or her. The child may equate his mothers love with the measure of extra sweets, etc. he has received on one given day and not with an affectionate greeting or being tucked into bed at night. Other mothers may sway erratically from frank neglect to sudden tremendous bouts of affection, the child becomes utterly confused and if food is available it becomes a surrogate for maternal affection.*

("privileged superhumaness"). There is a total distortion of the self-image. Some obese individuals delude themselves in thinking they may starve to death if denied food, or that the environment is hostile to them and may withhold food from them.

Many obese children suffer from intense loneliness and oral gratification is their main solace. They appreciate that they are figures of fun and it is difficult for them to make friends. Some will constantly refer to their body size and will draw attention to it. Many become compulsive eaters and like alcoholics, will suddenly engage in eating bouts for no obvious reasons. Social and psychological rejection by their peers may aggravate bouts of gluttony.

It is important that the difficulties that obese children encounter in their relationship with others should be looked into during their childhood.

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CAJANAQUOTE

The point must be made that within any group of people, whether "the world", a nation, a village or a household, some achieve adequate food intakes while others go short.

Unless we can answer the question, "Who are malnourished and why?" we cannot begin to suggest solutions. Poor people as a group are most at risk, yet even within low-income groups some (such as the unemployed, the old, and preschool children, to take a few examples) suffer more from a food shortage than others do. Even if it is proved for a certain country that total food supplies are inadequate to meet requirements (and there are very few countries for which this can be shown), an increase in food supply would be an ineffective way to deal with undernutrition, unless we could be satisfied that the additional food could be distributed to those in need of it. Increased food supplies may be needed in some areas, but analysis of the causes and background of maldistribution of food, and of malnutrition, is needed more urgently.

*Erica Wheeler
'Ceres', Vol. 6, No. 5, 1973.*

NUTRITION NEWS AND OPINION FROM THE CARIBBEAN

STANDARDS SET ON LABELLING

From the Barbados Sunday Advocate News, 13 January 1973.

A draft standard specification for the general labelling of commodities in Barbados has been prepared and circulated by the Barbados National Standards Institution in the first of a series of specifications to improve labelling in the country.

And Mr. Dudley Rhynd, Director of the Barbados National Standards Institution, has said that after dealing with this standard specification on general labelling, the BNSI would then turn its attention to more specific labelling. The next would be food labelling which was a very important one.

The general labelling requirements as set out in the draft standards are:

A label affixed to, or marked on a commodity or its packing shall conform to the following requirement:

- It shall give a description of the commodity and shall provide adequate information to a potential purchaser enabling the purchaser to select the commodity best suited to his or her needs.
- This shall include the weight, volume, measurement or size as applicable.
- It shall, if necessary, provide a purchaser with appropriate safety instructions.
- It shall, if necessary, provide a purchaser with operating instructions, and information on care and maintenance.
- It shall provide information enabling both manufacturer or supplier to be easily traced.
- It shall provide information relating to the country of manufacturer or origin.
- It shall be legible and durable up to the point of sale and where appropriate during the normal working life and use of the commodity.
- It shall not contain information that is false, misleading or deceptive, or is likely to create an erroneous impression regarding its character in any respect.
- It shall not contain information by words, pictorial or other devices which refer to, are suggestive either directly or indirectly of another commodity with which such a commodity might be confused, or in such a manner to lead the purchaser or consumer to suppose that the commodity is connected with such other product.

On the subject of conflict the draft states:

In the event of any apparent conflict between this specification and a supplementary specification, the latter shall prevail.

USING DISCARDED FISH IN GUYANA

From the Newsletter of the International Development Research Centre

The Government of Guyana has launched an imaginative project to create a fish industry for the local and regional market based on the discarded catch of fish from shrimp trawling operations. In the past, this fish has not been harvested, although it generally constitutes eighty-five percent of the catch, because of the shrimp industry's unwillingness to land and process a product that has comparatively low returns. Shrimp commands nearly \$2.00 per pound on international markets as opposed to the \$0.20 a pound this other fish might presently earn.

This longstanding practice of dumping all but the shrimp has not just resulted in the wastage of enormous amounts of edible protein, but also has encouraged the increase in scavenger species like sharks thus decreasing the available resources of both fish and shrimp. As a result, the Government of Guyana has decided to develop a viable fish industry and has sought help from private enterprises in the venture.

The International Development Research Centre, has given a grant of \$204,710.00 to the Ministry of National Development and Agriculture, Government of Guyana, to assist in the processing and development of new fish products, the establishment of testing facilities, and the training of local and regional technicians for the project. The Government of Guyana is contributing the equivalent of \$208,300.00 in the form of researchers' salaries, materials and laboratory facilities.

Although the pilot project is being undertaken in Guyana, the venture is likely to be significant for the entire Caribbean region which, despite the abundance of fish resources in the area, spends a good deal of foreign exchange in importing the equivalent of some 320,000 tons of fresh fish products annually.

If the research is successful, it should eventually be possible not only to replace some of the fish products normally imported, but also to develop new products suited to the proposed market at prices that would enable low-income consumers to increase their intake of protein. Higher-value frozen products for the supermarket trade and for tourist hotels may also be prepared, to ensure the commercial viability of the project and to provide incentives for private enterprise to join in establishing a fish industry.

A first step in the project, which is likely to last three-and-a-half years, is the gathering of data on the quantities and location of the main types of fish available during different seasons by assessors sailing aboard

the trawlers. The IDRC grant will also cover training Guyanese technicians in processing technology at laboratories and industrial plants in Halifax and Winnipeg, Canada and the provision of consultants to advise on methods and to review progress.

At a later stage, the Centre will sponsor a regional seminar workshop for scientists from neighboring countries. The Centre will also assist in the preparation of recipe pamphlets and a more comprehensive recipe booklet. It is also hoped that the seminar will lay the basis for technical publications of interest to food technologists that will cover the development of new products and the processing of species of fish not yet familiar to Caribbean market.

The International Development Research Centre is a public corporation, created by an Act of the Canadian Parliament in 1970, to support research designed to adapt science and technology to the specific needs of developing countries. The Centre is unique in that, while it is funded by the Parliament of Canada, it is governed by an international Board of Governors who independently establish its policies and priorities.

CANDIDATES INVITED FOR M.Sc. DEGREE IN NUTRITION

Candidates are invited to apply to enter this postgraduate course which normally extends for two academic years.

Qualifications to enter are a bachelor's or equivalent degree in biochemistry, or an agricultural or biological science or in chemistry or other subjects acceptable to the Faculty of Medicine.

Scholarships may be awarded to suitably qualified candidates. Further information and application forms may be obtained from the Tropical Metabolism Research Unit, U.W.I., Mona, Kingston 7, Jamaica, W.I., not later than June 15, 1974.

NEWSPAPER CLIPPINGS

WEST INDIES NEEDS FOOD REVOLUTION*From the Barbados Advocate, 27 January 1974.*

During the Eisenhower administration the farmers in the United States were paid not to plant food. A land bank was created and millions of acres were taken out of production. It would be interesting to find out the effect of this policy on the world food shortage and the sharp increases in food prices in recent years.

Looking at this situation it looks as though food prices have been rising indiscriminately and now people are having to face the alternative of 'to eat or not to eat'. For those of us living in what was once the British Commonwealth the situation has been further aggravated by the break up of the old Commonwealth and Britain's entry into the European Economic Community.

During the existence of the old Commonwealth there was a policy of relatively cheap food that served all concerned well. Today this policy has gone and all are feeling the effects. The poorer the country the harder the problem.

There is however another more serious cause and one that while it goes unchecked will make sure that eating will become a luxury for some people and some will most definitely die of starvation.

We hear a lot of talk about the Third World and the problems created for these areas of neo-colonialism, international corporations and the like. What we hear little of are the problems created for them by themselves arising out of their policies or lack of policies.

In the majority of the areas the obsession is with politics and to hell with the people while raising corruption to an art.

The significant thing about nearly all these countries is that their agriculture has gone backward while their population is expanding and their eating habits are changing thereby helping to facilitate the policy of shortage and rising food prices.

For as long as this backwardness continues and the neglect of agriculture remains dominant among the non-white peoples of the world, then the present situation is going to go unchanged.

The so-called Third World has been trying to jump a generation in development and there is no way that this can be done successfully. You cannot have an industrial revolution that has not been preceded by an agricultural revolution.

The industrial countries have also helped to create this problem in the so-called Third World. These have been lending money for programmes that cannot be sustained - knowing that they would fail - and therefore helping to perpetuate the system by which they get cheap primary products and pretend that aid to undeveloped countries is a viable policy.

Here in the West Indies it is a good thing that we have learned to laugh at ourselves. The biggest joke of the era must be the shortage of edible oil. This is one of the few things that we can produce yet we have succeeded in creating a shortage among ourselves. Now we are going to have to add this to our import bill.

There are a lot of questions that can be posed arising out of the edible oil situation but they are too embarrassing. Suffice it to say that when some of the Islands that grow copra should have been busy planning their copra production over the next ten years they were busy creating crises, like that over a disc jockey.

This is what I mean about the obsession with politics and the obvious disaster that now is awaiting most of us. It was recently described as the power of the 'X' it is, more than likely, the power of our degradation.

The level of the intelligence of the people we choose to represent us has long ago fallen short and those who had greater intelligence have used it to advance the processes of corruption.

Throughout the area the divide at which we now stand is ignorance on the one hand and corruption on the other.

It must now be painfully obvious to all that the pace of development in the West Indies will either stand still or go backward unless we can bring about a revolution in food production. Every year the food bill continues to drain us of what little savings we should be using for investment.

In spite of this in 1974 we have no plan to combat it. Throughout the area there are projects of doubtful usefulness to either the countries concerned or to the area as a whole while our agriculture continues every year to pass to a new low and somehow we continue to behave as though this can go on forever.

It is my suggestion that were some of the colossal sums of money wasted in overseas departments and prestige projects spent on research and subsidies in the field of food and agriculture, it would most probably have been paying dividends today.

There is no doubt about it, there is desperation among a growing number of the poorer people in the area. Inflation, shortage, hoarding, high prices, call it what you like, it is going to produce fundamental problems. No nation can sleep peacefully half satisfied and half hungry.

This question of food is going to create a dangerous divide. External policies like land banks is part of our problem, the other part is gross inefficiency at home and political ministries existing only in their creation - like agriculture over the last ten years in Barbados.

DENTAL CHIEF WELCOMES FLUORIDATION

From The Barbados Advocate, 19 January 1974.

The Barbados Dental Association has welcomed the Government's decision to lace the country's water supply with fluoride, president Dr. Peter Ward said yesterday.

And Dr. Ward was quick to point out that there was no danger involved in injecting the chemical into the supply. He noted that four-fifths of North America already has fluoridated water in some areas for more than twenty years.

Dr. Ward said that the sooner the project got underway, the better. He added that it was long overdue.

News that the Government would fluoridate the island's water supply was given earlier this week by Health Minister, Dr. Rameses Caddle, during a radio and television news conference.

Dr. Caddle predicted that in five or six years, incidence of tooth decay in the country could be reduced by up to fifty percent with fluoridation.

And the president of the Dental Association largely agreed with that forecast, although he made it clear that fluoridation did not mean a one hundred percent end to cavities.

With a proper follow-up programme, Dr. Ward predicted good results. He said that the Dental Association began pushing earnestly for the fluoridation of the island's water supply three or four years ago.

MEDICAL ASSOCIATION OF JAMAICA FORMS COMMITTEE TO ENCOURAGE CARIB MOTHERS TO USE BREAST MILK

From the Daily Gleaner, Jamaica, 8 February 1974.

The Medical Association of Jamaica has appointed a committee to consider recommendation, to be made to the Government for legislation, to encourage the use of breast milk instead of bottle milk by mothers in the Caribbean.

The Commonwealth Caribbean Medical Council, the Caribbean Food and Nutrition Institute, the Caribbean Association of Industry and Commerce, the Caribbean Advertising Agents Association and the press have all been included on the committee.

The Medical Association of Jamaica immediate past president, Dr. Matthew Beaubrun explained on Sunday that the committee comprising all parties interested in the subject, of what type of milk should be encouraged for the mothers, will after discussions make recommendations to the government.

Dr. Beaubrun represents the C.C.M.C. on the committee. Other members are: Mr. Winston Meeks, representative of the C.A.I.C., Dr. Robert Cook of C.F.N.I., Mr. Arnold Foote of the C.A.A.A., Mr. J. C. Proute of the press,

with Mr. Ken Campbell, editor of 'You and Your Baby' as secretary.

The committee's formation evolves from representations made by the C.C.M.C., who last November declared agreement with any move to encourage the use of breast milk over bottle milk by Caribbean mothers.

Dr. Beaubrun pointed out that the Council had agreed that poor mothers in the region owing to the social-economic position were stretching supplies of bottle milk with water, since they could not afford the milk.

"All the children are getting is water. We have taken a definite stand on the promotion of bottle milk over breast milk. The poor mothers in the Caribbean cannot afford the bottle milk, and this leads to malnutrition. The best milk from any point of view, however, is the breast milk," Dr. Beaubrun added.

Encouraging the use of bottle milk in developed countries, was alright he said, as the mothers in those countries could afford its price. But not in the developing countries, owing to the socio-economic situation most mothers could not afford the product.

He identified regular advertisements of bottle milk and promotion of its use by certain nurses, as the chief reasons behind the popularity of the product, which had to be tackled through Government legislation.

He added that the doctors' position regarding the use of breast milk had been referred to last year's meeting of the Caribbean Health Ministers' Conference and a seminar was arranged to study the problem.

BREAST FEEDING

From the Daily Gleaner, Jamaica, 21 February 1974.

THE EDITOR, Sir:- We must have come to the height of absurdity when a committee has been formed to encourage mothers to breastfeed and only men are on it.

It is perfectly simple to understand why women do not breastfeed. They go out to work.

As a matter of routine women are paid less than men, and we now see one result of such an immoral practice. There are no day care centres provided at the majority of factories and places where women do work. If there were it would be simple for a woman to take time off to feed her baby, and far less costly for her.

There are other less obvious factors which would inhibit breastfeeding, presumably the committee will find them out sometime, since they don't know from experience.

E. A. Dodd (ms.)

EDITOR'S NOTE: We appreciate Ms. Dodd's letter. However, we must point out that the reason why many Caribbean babies do not get breast milk is not primarily because their mothers go out to work. Jobs are far too few for this to be true. The reasons are much more complex as shown by many surveys.

CAJANAQUOTE

"In the sphere of maternal and child health, the rich countries have something to learn from the poor. Subjects such as mother-child relationships, methods of education, adaptation to diet, management of lactation, the incidence of allergies and of dental caries.

Cicely D. Williams
Speaking in Accra, Ghana
January 1973.

CFNI NEWS

ISABEL FOSTER

Isabel Foster retired from CFNI at the end of March. For the past six months Miss Foster has been working full-time as a coordinator of the Diploma In Community Nutrition Course. She has worked extremely hard at this and is much loved by all the students.

Miss Foster came to the Caribbean in 1966 as a FAO nutrition officer, based in Trinidad. In 1971 she moved to CFNI in Jamaica. Before reaching this part of the world she was Director of Dietetics at the University of Michigan for eleven years, then Assistant Professor of Nutrition at the American University of Beirut and then Nutrition Consultant to the Government of Guam in the Pacific.

Miss Foster has not really left the Caribbean as she is now living at the following address:

Miss Isabel Foster
417 'C' N.W. 39th Road
Gainesville, Florida 32607
U.S.A.

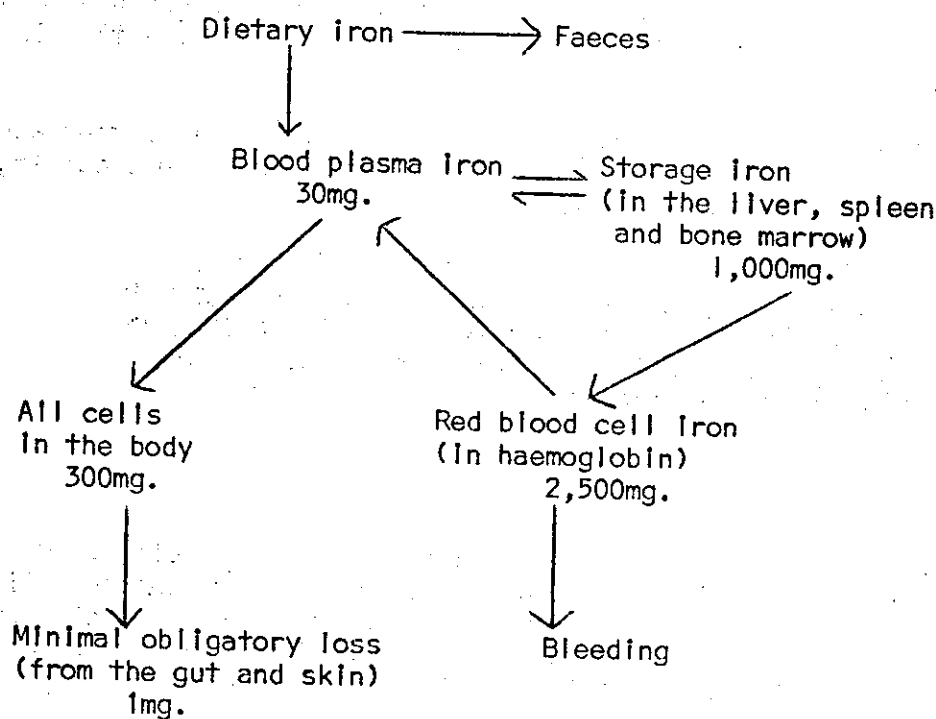
We look forward to seeing her again - soon and frequently. In the meantime we will keep in contact by letters.

NUTRITION MADE SIMPLE

HUMAN REQUIREMENTS OF IRON - J. M. Gurney*

Iron in the body

The figure below outlines what happens to dietary iron in the body of a healthy adult man. He loses only about 1mg. of iron a day. The rest of his body iron is 'recycled'. He therefore only needs to absorb 1mg. a day. All diets contain much more than this. Anaemia is rare among adult men. Bleeding (from injury, ulcers of various kinds or hookworm for instance) is the main cause of anaemia in this group. The minimal obligatory loss is that iron which is lost through wear and tear (particularly of the cells lining the gut and the skin).



The iron in our bodies is always linked with a protein: *haemoglobin* which is found in the red blood cells (erythrocytes) is a protein; plasma iron is joined to the protein called *transferrin*; storage iron is in the form of the protein *ferritin*; iron in muscle is in the form of the protein *myoglobin*.

*Caribbean Food and Nutrition Institute, P.O. Box 140, Kingston 7, Jamaica, W.I.

In women the menstrual blood loss brings the amount of iron being lost each day up to about 3mg. The actual amount varies very much between women. In the second half of pregnancy iron is lost to the foetus, placenta and so on; this also results in about 3mg. lost per day if taken over the whole pregnancy period. Breast milk supplies between 1.0mg. and 1.6mg. daily to the baby. A lactating woman who is not menstruating is losing about 2mg. of iron daily. 600mg. of breast milk, an average daily yield, contains about 1.2mg. of iron. Women being smaller than men, have slightly lower minimal obligatory losses say about 0.8mg.

In pregnancy the blood volume of the mother increases considerably so she can keep the placenta supplied with blood. This implies that more haemoglobin needs to be produced. The iron for this is taken from the stores and, at end of pregnancy, is returned to the stores. If a pregnant woman has deficient iron stores she will need a much greater dietary iron intake than usual and is almost certain to become anaemic during her pregnancy.

A very young baby has a store of iron left over from what he accumulated from his mother before birth. However, if he is a twin (and has had to share this maternal supply) or is premature (and has not received it yet) this store may be lacking.

Older infants and children have less obligatory iron loss than adults (being smaller) but their blood volumes are growing. They need about 1mg. of iron a day (the same as an adult man).

Men and children need about 1mg. of absorbed iron a day. Women need about 3mg. to offset the losses in menstruation and pregnancy. Pregnant women whose iron stores are deficient need much more. Infants under four months of age need very little unless they are premature or twins.

Iron absorption

All diets contain much more iron than the consumer requires. However, iron is not readily soluble in water and is thus not easy to absorb. Similarly it cannot be excreted in the urine for the same reason. The mechanism controlling iron absorption in the gut (the small intestine in fact) is very complicated. Judging from the frequency of iron deficient anaemia this absorptive mechanism is surprisingly prone to breakdowns.

Dietary iron comes in different forms and with different absorbabilities. Iron in foods of animal origin is better absorbed than that in vegetable foods. Diets in which foods of animal origin provide more than twenty-five percent of total energy have up to one-fifth of their iron absorbed. The rest passes out in the stool. If less than ten percent of total energy is from animal origin only about a tenth, at most, of dietary iron is absorbed.

Thus an individual who requires 1mg. of iron per day needs about 5mg. to 10mg. of dietary iron. 10mg. can be considered a safe minimum.

Iron is very poorly absorbed in the gut.

Other factors influence the absorption of Iron. Three types of examples are given:

Both meat and ascorbic acid (vitamin C) if taken with a source of Iron can enhance its absorption. Phosphates, phytates and eggs in the diet can reduce Iron absorption. Iron absorption is poor in children who have fever.

There are other examples all of which go to show that the problems of Iron absorption are complicated; we do not yet fully understand them.

The body itself can influence how much Iron is absorbed. If the stores are low or if haemoglobin is being rapidly built up (for instance after an accident involving loss of blood) absorption of dietary Iron is considerably improved. The mechanism of this effect is not known.

Iron absorption depends upon the quality of the diet as well as upon its total iron content and the body's needs. It is influenced by pathological conditions.

Dietary iron requirements

A joint FAO/WHO expert group meeting in 1969 set out recommended intakes of Iron. They were reviewed in 1971. They are considered by some to be unrealistically high. They are as follows:

Recommended Daily Intakes of Iron

	Absorbed Iron required (mg)	Recommended Intake according to type of diet		
		Animal foods below 10% of calories (mg)	Animal foods 10-25% of calories (a) (mg)	Animal foods over 25% of calories (mg)
Infants 0- 4 months	0.5	(b)	(b)	(b)
5-12 months	0.7	7	5	4
Children 1-12 years	1.0	10	7	5
Boys 13-16 years	1.8	18	12	9
Girls 13-16 years	2.4	24	18	12
Menstruating women (c)	2.8	28	19	14
Men	0.9	9	6	5
Pregnancy and throughout lactation		Improved diet plus tablets containing 120-240mg. iron per day	Improved diet plus tablets containing 60mg. iron per day	If iron stores are adequate 30mg., If inadequate 60mg. iron per day by tablets

(a) Most Caribbean diets fall into this category

(b) Breast-feeding is assumed to be adequate.

(c) For non-menstruating women the recommended intakes are the same as for men.

Dietary sources of iron

Iron is found widely in nature. However, its absorbability varies as indicated above. The amount in plants depends to some extent on the amount in the soil. Dark green leaves are good sources, so are legumes. Because so much is often eaten cereals often provide a main part of people's iron supply. Fish, meat and eggs are good sources. Internal organs such as liver, heart and kidney are especially rich in iron. Crude dark sugar is an important source in the Caribbean.

Good protein sources are often good iron sources.

Iron tablets

Iron deficiency manifests itself first as deficient tissue stores and later as *iron deficiency anaemia*. In anaemia, which is not discussed here, there is too little haemoglobin (Hb or Hgb) in the red blood cells. This can be easily measured by a simple blood test. Note however that the Hb level does not indicate whether or not iron stores are adequate. The measurement of iron stores is not a simple clinic procedure.

Iron deficiency anaemia responds well to iron tablets supplementing the iron in the diet. The commonest - and best because cheapest and good - form of iron tablets is *ferrous sulphate*. Ferrous sulphate is available as a suspension for babies and young children.

Prophylactic administration of supplementary iron to vulnerable groups is good nutritional practice. Nutrition education can be combined with iron supplements but should not replace them. The foregoing should indicate which groups in the population are particularly vulnerable to iron deficiency anaemia and thus need iron supplements.

Question: Who needs iron supplements?

Answer: (Written upside down so you can think out the answer first).

All pregnant women need supplementary iron tablets throughout their pregnancy. It is wise to continue through lactation. (It is unwise to wait for anaemia to develop before giving iron). All infants and children from four months to two years of age should get supplemental iron. All people who have suffered heavy bleeding need extra iron.

Further Useful Reading

1. Latham, M. (1965) "Human Nutrition in Tropical Africa". FAO: Rome
This provides, between pages 71 and 73, a good basic description of Iron in the body.
2. Callender, Sheila, T. (1972) "Iron Deficiency Anaemia". *Nutrition*, pp. 348-356.
This is a very clearly written and detailed account.
3. Finch, C.A. (1969) "Iron Metabolism - some new thoughts on what is perhaps the most plentiful, versatile, paradoxical, puzzling nutritional mineral of them all". *Nutrition Today*, Vol. 4, No. 2.
This article, reproduced as Nutrition Today Teaching Aid No. 4 with slides to accompany it, goes into interesting detail.
4. Joint FAO/WHO Expert Group (1970) "Requirements of Ascorbic Acid, Vitamin D, Vitamin B₁₂, Folate and Iron". *Wld Hlth Org. techn. Rep. Ser.* No. 452.
Pages 48 to 57 deal with Iron. The report makes a serious underestimate of the amount of iron secreted in breast milk but otherwise gives detailed reasons for the recommendations of the group.
5. WHO Group of Experts (1972) "Nutritional Anaemias". *Wld Hlth Org. techn. Rep. Ser.* No. 503.
This follows up reference No. 4 above and modifies recommended daily intakes.

LAST THOUGHT:

One 1½ inch nail weighs about one gram. The total amount of iron in our bodies is therefore equivalent to about four such nails. It is curious that such a common element is unavailable to so many people in the form they need it.

CANDI NEWS

The mid-year Board Meeting was held as planned in Tobago on 26th January.

The topics selected for discussion for the Second Annual Meeting which will take place in Jamaica on 27th and 28th June are as follows:

Approaches to Community Nutrition
Developing Dietary Standards for the Caribbean
Diet in Cardiovascular Disease
Programmes for Dietetic Aides

It is hoped that the cost of travel will not prevent our having full representation from the Eastern Caribbean.

Those interested in knowing more about CANDI and/or joining us at the June Meeting should contact:

Miss J. A. Shurland
Secretary
C. A. N. D. I.
13 Independence Avenue
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Trinidad

OR

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EDITORIAL

Fathers are often very influential in deciding the diet of their children. They may have definite ideas of their own on such matters as breast-feeding, weaning foods and foods of particular value. They more often than not provide most of the money used to buy food for the family. Ida Daum, in an article beginning on page 99 explores the role of men in young child feeding and emphasises the importance of nutrition education for men.

Too often perhaps, nutrition education and home economics are considered as subjects for women alone - beyond the understanding and outside the interest of men.

Childbirth has always been, until very recently, an extremely dangerous time in a woman's life. The establishment of successful lactation, while entirely 'natural' is by no means easy. It requires rapid development of a feeling of confidence between the mother and her newborn. For new information on the development of this relationship see page 82. In all human societies a special person, usually the mother's own mother, gives reassurance and help to the young mother during the establishment of lactation and growth of her love for the infant. This person is crucial to successful lactation. In small nuclear, mobile families, separated from their kin, such as we find in the urban Caribbean, the father may well have to perform this important role to the best of his ability. Sometimes the mother receives very little such help and has to go through the awesome experience of getting to know and cherish her new and entirely dependent infant alone and without help.

In the urban areas of the Caribbean, unemployment is common among young fathers, who therefore may stay at home while the mother goes out seeking work. In such situations fathers may well play an important part in child rearing. Delineation of roles in child care is becoming less definite in the second half of this century not only among the impoverished but, strikingly, among the affluent. Father is no longer the sole breadwinner, the authoritarian and rather remote figure he has often been made out to be. One doubts if, in peasant societies and other groups where the family works together, fathers ever were quite like this. They may well be so in hunting and commuting cultures.

It seems that, whatever changes are occurring in society, fathers remain important influences on the nutrition of the families - including the diet of the very youngest babies. Fathers must always be included in nutrition education.

THE EDITOR

TOPICS AND COMMENTS

BEHAVIOURAL SYNCHRONY, BREAST FEEDING AND DEPRIVATION*By J. M. Gurney*

Two interesting reports have been published recently.^{1, 2} Some of the highlights are presented below.

Suckling is an example of an at first spontaneous behaviour. Even the youngest newborn suckles automatically. Suckling involves a complex series of movements that are well coordinated with swallowing, breathing and the rooting reflex. A newborn baby tends to suckle twice a second for between five to twenty sucks, then to pause for up to a quarter of a minute and then to start again, i.e. suckling is both spontaneous and rhythmic. These pauses between bursts of suckling give the mother opportunities to interact with the baby, for example by stroking, jiggling and chatting to him. This interaction, if well timed tends to initiate a new burst of suckling. Clearly at a very early age the beginning of a relationship is set up. The, at first spontaneous, reflex of suckling quickly becomes influenced by the mother's behaviour. The basic reflex pattern appears to be designed to encourage the early development of mother-child interaction and the growth of love.

The baby may start a burst of suckling spontaneously; he may be stimulated to do so by contact with the nipple. On the other hand at times such contact has no effect if the baby is not ready for suckling. An experienced mother understands this.

Babies who have more frequent contact with their mothers in the first days of life tend to gain weight faster, have better scores in paediatric examinations and also seem to show better mother-infant relationships during and even beyond the first month of life than do babies who have less frequent contacts. Some of our hospitals - being neither traditional nor modern in this respect - keep mothers and babies separated for hours at a time - the baby in the nursery and the mother in the bed. Some mothers at home do the same, leaving their babies in the cot, watched but unattended.

Breast-feeding may require rather more frequent contact between mother and child than bottle feeding. Concentrated nutrients can be force fed through a bottle. The evidence suggests that this greater frequency of contact may well be important for the future mother-child relationship and thus for the child's total development (and for the mother's development too).

Mothers in Britain who gave up breast-feeding said often that they had done so because they did not have enough milk to feed their baby. The baby failed to sleep for three-and-a-half to four hours and often woke and cried two to three hours after a feed. We find the same reason being given for early supplementation in the Caribbean. It seems that the British mothers interpreted the babies' demands as a failure on their part to provide enough milk rather than a need of the baby for more frequent suckling (involving both food and interaction with the mother). Women who breast-feed more successfully are those who adapt their routines to the needs of their babies and so shorten

periods of separation. Less contact in the first ten days is associated with less successful lactation later on.

References

1. "The one-day-old deprived child" by Dr. Martin Richards (lecturer in Sociology in the Medical Psychology Unit at Cambridge, England). *New Scientist*, 61, 820-822 (28th March 1974).
2. "Behavioural synchrony in infancy" by Rudolph Schaffer (professor of Psychology at Strathclyde University, Scotland). *New Scientist*, 62, 16-18 (4th April 1974).

PROSPECTS FOR FOOD SUPPLIES*

By G. R. Allen**

The short-term prospects for food supplies is worse than, perhaps, many pessimists believe. The world fertilizer industry, over-reacting to the low profits, and even losses, associated with its excess production of recent years has failed to build capability necessary to meet current requirements and those for the next three years. Phosphate supplies will probably remain below demand for two years. Nitrogen is lagging more seriously and seems unlikely to be sufficient before late 1977.

The need for additional plant nutrients is likely to grow for the rest of the decade at about the same percentage rate as in 1950 to 1973. Taking into account the likely changes in supply (my own estimates based on a considerable association with the fertilizer industry) a picture of acute fertilizer shortage emerges.

Year ending June 30	Plant nutrient requirements (million short tons)	Shortfall below requirements (million short tons)		
		Nitrogen	Phosphate	Total
1973	87	-	0.5	0.5
1974	95	2.0	1.5	3.5
1975	105	2.0	0.5	2.5
1976	114	4.0	0.2	4.2
1977	124	5.0	-	5.0

*This piece first appeared as a letter in the Times, London 3rd April 1974.

**G. R. Allen is Professor of Agricultural Economics at the University of Aberdeen, Scotland.

The geography of the shortages will determine the magnitude of the implied loss of grain. For the world as a whole one ton of fertilizer will yield around six tons of grain. But in India, Pakistan and other areas of the Green(ish) Revolution 1:10 is more appropriate. At these alternative ratios the lack of fertilizer will cause the following shortages of grain:

Year	One ton of fertilizer yields six tons of grain (million short tons)	One ton of fertilizer yields ten tons of grain (million short tons)
1973	3	5
1974	21	35
1975	15	25
1976	25	42
1977	30	50

It will be the developing countries, who are large net importers of plant nutrient, who will lose as fertilizer shortages increase. India has already announced an expected ten million tons shortfall of grain in 1974 below its target of one hundred and fifteen million tons, due to a lack of one million tons of (largely imported) fertilizer.

Should the weather provide good world wide grain yields in 1974, we will have gained but a breathing space. The prospects for 1975-1977 are simply appalling.

DEVELOPMENT OF WEANING FOODS*

By Dr. E. M. DeMaeyer**

Baby foods based on cereals, whether imported or locally produced, are in general unsuitable when consumed alone because of their low protein content. It is only by mixing them with milk that it is possible to obtain a food of good nutritive value. The solution is to produce and market locally highly nutritive weaning foods that do not require the addition of milk but meet protein and energy requirements and are designed to supplement the traditional diet of infants and young children. Such products should be attractively presented and marketed at as low a price as possible.

*This is taken from "Foods for Babies and Toddlers" written for World Health Day, 1974.

**Dr. DeMaeyer works with the World Health Organization.

This is the policy that FAO, WHO, and UNICEF have applied with growing success during the past fifteen years in developing an international programme of weaning foods. The first product of this kind, which was not originally developed as a weaning food but as a beverage to supplement the diet both of adults and children, was Incaparina, placed on the market with varying degrees of success in the 1960s in Guatemala and other Central American countries. Its ingredients included maize flour and a cottonseed protein concentrate. In Colombia a modified formula of Incaparina incorporating maize and defatted soya has been introduced with a view to producing a more adequate weaning food. Incaparina and two similar products are now competing in Colombia with various imported or locally produced weaning foods, and their introduction has been facilitated by the tax exemptions that the government has accorded within the framework of its social policy.

In the last five years other weaning foods have been developed in Algeria (Superamine), Tunisia, Morocco and Egypt (Supramine), Turkey (Sekmama) and Iran (Shadamin), and are already marketed commercially in some of these countries. Typically, they contain a cereal, a mixture of pulses (chickpeas, lentils), with the addition in certain cases of soya, sugar, and sometimes a small percentage of skimmed milk, a vitamin and mineral mixture, and a flavouring agent. These food mixtures are in the form of white or slightly yellowish flours; they are in some instances partially pre-cooked, in which case the time required to cook them before feeding is reduced to three or four minutes. This short cooking time is advantageous by comparison with instant foods when the quality of the water used in the preparation is doubtful. In other cases the flour is of the instant type and can be used at once after mixture with warm water without any additional cooking. For such preparations enzymes (amylase) are added during the industrial processing, or an extrusion process is used. In both cases, good digestibility without further cooking is ensured by the transformation of starch into dextrin. Both these processes are slightly more costly and are intended to meet the needs of sophisticated customers. Packaging varies according to the market but should in principle be as simple as possible, in the form of polythene bags, for example, containing 300 grams of the product. This amount is sufficient to supplement the ration of a young child for three days. The polythene may be reinforced by aluminum foil to offer greater protection against deterioration and also a better presentation. In Egypt, plastic containers are used. What is important is to keep the prices as low as possible.

THE NUTRITION TODAY SOCIETY

On 1 May 1974, the formation of the Nutrition Today Society was announced in Washington, USA. The Society, which will circulate the well-known Nutrition Today Publication to members, is "dedicated to the increase and dissemination of nutrition knowledge". It is stated that the Nutrition Today Society will strive to do for nutrition what the National Geographic Society has done for Geography.

The Society's officers and directors comprise seventeen leaders in health science and related professions in the United States and Canada. Dr. J. A. Campbell, Deputy Director of the Caribbean Food and Nutrition Institute, is one of the directors.

Application forms for membership in the Society (regular \$12.50; students \$6.25 US) and thus subscriptions to Nutrition Today, may be obtained by writing to:

The Nutrition Today Society
1500 Eckington Place, N.E.
Washington, D.C. 20002
U.S.A.

CAJANAQUOTE

We foresee continuing "consumerist" pressure from the standpoint of reducing the use of food additives. This will result in more advertising to point out, where applicable, the products that do not contain so called food additives, although the public understanding of the use and need for food additives will not be any better than it has been in the past.

*Ray C. Frodey, Vice-President
Research and Quality Control
Gerber Products Company - (giving
his views on challenges, opportunities and trends facing the USA
cereal processing industry in 1974).*

Cereal Science Today, Feb. '74, p.61.

THE USE AND ABUSE OF MULTI-VITAMIN PREPARATIONS*

by

J. A. Campbell**

Vitamins and minerals are wonderful substances. Probably their most outstanding effect is the amount of heat generated in any debate on their use and abuse. They have been credited from time-to-time with curing practically all diseases, real or imaginary, which are known to man. The list is inexhaustible and includes such conditions as cancer, heart disease, nervous disorders, skin conditions, sexual problems, failing eyesight and falling hair.

There is no doubt, of course, that when the effects of vitamins were first discovered, they seemed miraculous. For example, it was almost unbelievable in the winter of 1535 that a concoction from pine needles could bring Cartier's men (discoverer of Canada) from a state of total debility due to scurvy, back to good health. It was equally miraculous to see the effect of a few micrograms of vitamin B₁₂ on a patient who had had pernicious anaemia for some time. Since some of these cures were so dramatic, it is understandable, but not excusable, that the whole field of vitamin therapy has been of great interest to pseudo-nutritionists and producers of vitamin-mineral preparations. Each one has his own particular formula or combination, many of which are claimed by word of mouth as elixirs of life. Such claims are of great interest to the consumer who sees in them what appears to be a quick and simple cure for his ills. Unfortunately, he has no means of assessing the validity of the claims. On the other hand, those in government who are charged with responsibility for

*From a paper presented before the Continuing Education Programme at the University of British Columbia, Vancouver.

**Dr. Campbell, Deputy Director of CFNI was formerly with the Health Protection Branch, Health and Welfare Canada.

regulating the sale of the preparations from the point of view of health hazard and fraud, take a more conservative view of the therapeutic action of the preparations. Before claims are made on labels or in advertisements, we require well-documented scientific proof that they are valid. Occasionally it has been felt that we are overly conservative and unduly difficult to convince.

In view of the present interest in these substances, it is very appropriate therefore, that the use and abuse of vitamin-mineral preparations be reviewed. What is their value? How should they be used? What is the true situation?

The problem can be looked at from several points of view. Let us look at the first point - man has need for a daily allowance of nutrients. This does not mean that he must receive an exact amount each day, but there is an amount of each vitamin and mineral which, if not reasonably consistently consumed, will result in symptoms of deficiency. This amount varies according to the age, weight, sex, activity and physical state of the individual and, depending on the ability of the body to store a specific vitamin or mineral, each of us should meet the minimum requirement on a daily or less frequent basis. If, for example, a child consistently does not receive about 30 mg. of vitamin C and 400 I.U. of vitamin D, specific symptoms will appear. Vitamin C is not stored in the body and should be taken daily. Its lack causes scurvy. A lack of vitamin D causes rickets in children but since this vitamin like other fat-soluble vitamins is stored in the liver, it is not so important that the necessary amount be consumed on a daily basis. However, these and other essential nutrients must be supplied, either by the regular diet or in addition to the diet (this may not apply to vitamin D in the Caribbean area).

Food is the normal source of nutrients for the body. Historically, man has survived more or less effectively for centuries on a varied diet. He even

did reasonably well before he knew of vitamins and minerals or of their wonderful effects. History does, of course, record that where his dietary intake was restricted for some reason, he did run into deficiency diseases. In the British Navy when fresh fruit and vegetables could not be obtained, symptoms of scurvy were encountered. In Japan, when the diet was restricted to polished rice, the population suffered from beri-beri. We know now that the simple addition of the appropriate nutrient would have prevented the symptoms of deficiency.

The second point is that vitamins are not cure-alls. They will not affect conditions which are unrelated to their specific action. The idea of the usefulness of vitamins for all diseases has been with us for a long time and is simply nonsense.

To take an example - a deficiency of vitamin A manifests itself in several ways, for example, slow adaption to seeing in the dark, night blindness, a roughened skin condition known as follicular hyperkeratosis and keratomalacia. The ingestion of sufficient vitamin A will alleviate these conditions. It will not, and this is one of the greatest fallacies in vitamin treatment, improve poor eyesight due to other causes. It will not help eyes inflamed by other agents. There is no good evidence that it will cure skin conditions such as adolescent acne. It will cure nyctalopia, i.e. night blindness, but not myopia or shortsightedness. To use vitamin A for such purposes is useless and to promote it for such purposes is fraudulent and possibly harmful since proper treatment may thereby be delayed.

Thirdly, let us turn to the role of food in supplying our vitamin and mineral requirements. Today - we have probably a greater variety of food available than at any time in our history. Some people, nevertheless, have problems. Some do not like vegetables and fruits. Others cannot chew certain foods. Some have problems of allergy or food intolerance which force them to avoid certain

foods, and still others have medical problems which interfere with the absorption and utilization of nutrients and thereby may modify their needs for nutrients. These people may find it necessary to supplement their diet in order to obtain the recommended levels of nutrients. Those with increased requirements as in pregnancy, lactation or infection, may also need to supplement their diet.

When we say we do not like a certain class of foods, e.g. vegetables, fruits, or meats, we should realize that we are limiting not only our intake of known nutrients but also our intake of factors for which as yet we do not know our needs. In this regard, one can think particularly of trace minerals such as chromium. Thus it is important, to use a varied diet which includes all the food groups, i.e. meats, vegetables, cereals, fruits and milk.

Now let us assume that for some good reason you cannot consume a variety of foods. What kind of vitamin preparation should you seek? In this case, the purpose or need is primarily to supplement the amounts of the nutrients supplied in the diet so that your full daily requirements are met. When you go to the pharmacy you are confronted with an almost endless variety of mixtures and concentrations of vitamins and minerals containing from one to twenty-five or more items. They include formulations with or without minerals, with high levels of B vitamins, high levels of vitamins A and D, shot-gun hematinics, A, D, C drops and single vitamins and injectable preparations. While some of these are used for specific conditions which can be diagnosed in a clinic, most are undoubtedly sold in response to a request - 'I want a vitamin preparation'. Many are recommended to assure an adequate intake of the nutrients listed but one may question why certain ones have been included and what to do about the nutrients which are not listed.

One might also question for example, what clinical or dietary diagnosis would justify the use of high levels of B vitamins alone, or the use of

hematinics which contain all the factors likely to cure three or four types of anaemias, but little else. On the other hand, a preparation containing only vitamins A and D for children has some logic. A varied diet may be consumed but unless it includes milk and margarine containing vitamin D, additional amounts of this nutrient may be needed. The same arguments apply to vitamin A in skim milk and margarine. (In the Caribbean, the sunlight is an important source of vitamin D and thus there is less need to add it to foods or use it as a supplement).

It would appear to be an abuse on the part of the manufacturer to promote a variety of vitamin-mineral formulations without giving more adequate directions for their use, both to the physician and the consumer.

Fourthly, what about excessively high levels of nutrients. If a certain amount will do some good - it is argued - more should do more good. If we followed this argument we should be able to work twice as hard or run twice as fast if we consumed double the amount needed just to operate normally. Unfortunately this is not the case. Amounts of nutrients in excess of body requirements have no value nutritionally, except possibly to enrich the bacteria in the sewage. Excesses of water soluble vitamins are largely excreted in the urine and excesses of fat-soluble vitamins stored in the liver. Only in certain rather specific and usually rare cases such as vitamin D resistant rickets, is there any real need for high levels. The possibility, of course, cannot be excluded that vitamins or minerals have some specific pharmacological action in addition to their role as nutrients. To date, however, clear-cut evidence for few nutrients has been forthcoming.

We have been concerned about the use of vitamins A and D at high levels and have placed on prescription in Canada products containing more than 10,000 I.U. vitamin A in a recommended daily dose. Warnings have also been issued

to physicians to alert them to the possible harmful effects of high doses. The requirement for vitamin A is about 3,500 I.U. for a person of average size. Daily doses as low as 18,000 I.U. in water soluble form will cause a variety of conditions in infants including nausea, soreness of the bones and in severe cases, increased intracranial pressure. These symptoms have been well documented in the scientific literature. There is really no good use for vitamin A in excess of 10,000 I.U. except in certain cases which should be treated under the supervision of a physician.

In the case of vitamin D, the requirement is 400 I.U. Excessive amounts cause nausea, poor appetite, listlessness and in severe cases, hypercalcemia and convulsions.

In these cases it is a very serious abuse to promote the idea that high levels of nutrients are beneficial without clear evidence that such levels are in fact effective, and more important, are not toxic.

Finally, what about the promotion of food constituents and compounds which have no known function in human nutrition as useful supplements to the diet. There are many substances which are incorporated into multi-vitamin-mineral preparations which are not essential nutrients for man and which may or may not be useful to other species of animals. These include items such as choline, inositol, rutin, glutamic acid, hydrochloric acid, royal jelly, cobalt and boron, to name only a few. When added to the label however, they give the impression to the unwary that here is a product which is much more complete than one without all these factors. Other products such as garlic oil and lecithin are promoted individually as food supplements. The amino acid, lysine, is an essential nutrient, but when consumed with a diet which is not limiting in lysine, will be of no value.

It is our view that it is an abuse to promote substances as food supplements which do not in fact supplement the diet. It is also an abuse for a manufacturer to make claims verbally for the action of such substances when no function for them exists in human nutrition.

Now, to summarize, what is the use and abuse of vitamin-mineral preparations.

They are useful for the treatment of specific vitamin and mineral deficiency diseases.

It is an abuse to promote vitamins or minerals as cures for conditions which they will not treat, thus delaying proper diagnosis and treatment.

It is an abuse to recommend vitamin and mineral preparations for those who consume a normal varied diet.

Rational formulations are useful as dietary supplements for those whose diets may be deficient because they cannot or do not consume a normal varied diet.

It is an abuse to formulate mixtures for which no rationale exists.

It is an abuse to promote the idea that high levels of vitamins are beneficial without clear evidence that such levels are effective and non-toxic.

It is an abuse to promote as dietary supplements, substances which have no known function in human nutrition.

Finally, our best advice is, read the label. If the claim does not appear *in print* on the label or in the advertisement for the product, take it with a grain of salt.

HEALTH HAZARDS PERTAINING TO OBESITY*

by

Dr. T. Hassell, M.B.F.S; M.R.C.P.**

The Third World or non-industrialised countries have traditionally been known to suffer from, and be plagued with the problem of malnutrition; that is, under-nutrition; and understandably have contributed significantly to the total world knowledge in this field - perhaps the most esteemed contributor being Dr. Cicely Williams of Jamaica. Today, I am very pleased that we in our own relatively non-industrialised communities here in the West Indies are attempting to tackle one problem of malnutrition; now defined by me to mean "bad nutrition" - the end result of which is obesity. For I feel that unless we take steps at this stage of our medico-social development to control that form of malnutrition which leads to obesity, then we are likely to find ourselves in twenty to fifty years in a similarly unhappy position to that currently held by the more industrialised communities.

Definition and Diagnosis

Obesity is a condition which may be defined several ways depending on one's audience and the purpose for which the definition is being used. Thus obesity may best be defined as the excessive accumulation of triglyceride fat in the adipose tissue depots of the body. Triglycerides are fatty acids which have been esterified with glycerol: the latter being formed from glucose. There are of course simpler, and in some ways more practical, definitions of obesity such as, that it is a condition in which the body contours are distorted by a

*This paper was presented at the 1973 Annual Meeting of the Caribbean Association of Nutritionists and Dietitians in Barbados.

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diffuse accumulation of adipose or fatty tissue. Clinically, in fact, the condition of obesity is determined as being present when an individual's weight is at least ten percent in excess of the normal or desirable weight as shown by Life Insurance tables - this assumes that the excess weight gain is not due to the collection of oedema fluid or excessive muscular hypertrophy.

In 1965 Hopkins in England estimated that twenty out of one hundred and fifteen consecutive patients, that is, 17.4%, were obese - only two of these complained of being overweight.

It is easy to recognize obesity when a patient weighs three hundred pounds. When not this gross, it is important to have other methods of determining the presence of obesity. There are several experimental methods available such as the direct measurement of fat content of cadavers, the determination of body water or cell mass by isotope dilution techniques, the measurement of fat soluble substances by chemical methods and finally the use of densitometry. These all correlate well with the simpler clinical methods of recognising obesity such as the use of height and weight curves (using charts) and the measurement of skin fold thickness.

Causes of Obesity

Generally speaking, there are three major contributing factors as to why patients become obese. Firstly, the familial tendency of the condition - thus only ten percent of children both of whose parents are of normal weight are likely to be obese; if one parent is obese then forty to fifty percent of the off-spring are likely to suffer a similar fate and finally if both parents are obese then eighty percent of their children are likely to be so. The second major contributing factor to obesity is the indulgence in bad dietary habits which takes the form of gorging. To this is added the bad effects of reduced physical activity which occurs in adolescence and after the age of twenty-five

to thirty years. The third contributing factor in the production of the obese person is of much less importance than the first two, but should be mentioned for the sake of completeness. As a group they account for less than one percent of all the causes of obesity and include several rare endocrine abnormalities such as hypothyroidism or underfunctioning of the thyroid gland; Cushing's syndrome, or over-functioning of the adrenal glands and damage to the hypothalamus in the brain - this damage may either be as a result of trauma, an inflammatory process or a tumor. Finally, rare genetic abnormalities such as Froehlich syndrome are also to be included in this group.

Consequences of Obesity

It is often said that one of the main reasons why there are so many obese Barbadians in general and Barbadian women in particular is because "Barbadian men like their women to look fat and good". If this is the case, then clearly our men are providing a disservice to our female counterparts, for not only does obesity distort the physical appearance of an individual - especially in later years, but it is also directly responsible for, or predisposes a fat person to several illnesses. There are some twenty major illnesses to which obesity predisposes us or for which it is directly responsible. Some of the conditions are more common than others and are more productive of ill-health and in this connection will be discussed at some length. The frequency with which obesity precedes the onset of diabetes mellitus in the adult has been recognised for almost as long as diabetes itself. A mechanism whereby obesity might cause diabetes was suggested as long ago as 1935 by Ogilvie - it is still the most currently held theory, and postulates that obesity causes an over-stimulation of the islet cells of the pancreas gland with eventual pancreatic exhaustion, fall in insulin production from the pancreas, and hence diabetes - there is four times as much diabetes among obese persons that those who are not fat.

There is a strong association between hypertension and obesity. In a population survey we have shown this to be true in Barbados. The reasons for this strong association are not clear but it is felt that the increased vascular bed which is produced by the presence of excess fat causes an increased circulating blood volume and increased heart output. This occurs with a fixed heart rate and so the stroke volume of the heart increases with a consequent increase in blood pressure, that is, hypertension results.

One of the next important complications of obesity are respiratory diseases and respiratory failure. These occur when the lungs fail to work adequately. In the obese individual the decreased mobility and compliance of the chest wall necessitates a greater effort to breathe than in the lean person. When the extra effort is not made the amount of air breathed in each breath decreases with resultant carbon dioxide retention, somnolence and also increased respiratory infections.

There are a group of illnesses which occur in the obese person as a result of a mechanical disability. In fact the structure of the human skeleton is not at all well adapted to carry an extra load, consequently flat feet, and osteo-arthritis of the knees, hips and lumbar spine are more common in obese people than in those of normal weight. The abdominal muscles that support the viscera, and those in the legs which help, by their contractions, the venous return of blood to the heart, are infiltrated with fat. Hence their normal mechanical action is impaired, with consequent abdominal herniae and varicose veins. But perhaps the most striking result of obesity is the thirty to forty percent reduction in life expectancy. If an individual is ten percent overweight expected mortality is increased by thirteen percent, if twenty percent overweight the anticipated mortality is increased by forty percent, and if he is thirty percent overweight then mortality is increased by forty percent.

Management and Treatment of Obesity

I would finally like to discuss very briefly the management of the obese person, if only because there is so much well-meaning but often misguided advice given regarding ways to lose weight.

The management or treatment of obesity requires first and foremost a high degree of patient motivation - this point cannot be stressed too strongly; thus if an individual is not convinced that he or she should lose weight, then all efforts at weight reduction on the part of the doctor or well-meaning friends are doomed to failure. The next most important point is that individuals wishing to lose weight should reduce food intake so that they consume about 1000 kilo calories per day. This should then be supplemented if necessary by the use of appetite depressants. The commonest and most useful of these are diethyl perlon (Aplisate) and fenfluramine (Ponduax) - I should add that the amphetamine group of drugs of which methedrine is an example is no longer used as an appetite suppressant.* Thus with strong patient motivation, adequate medical encouragement, strict dietary control and the use of appetite depressants as adjuncts to therapy, slow and sustained weight reduction which is desirable is often obtained. If sustained weight loss is to be achieved the following should be avoided:

- the use of starvation diets;
- the setting of time targets for weight;
- the use of single daily meals;
- the substitution of appetite depressants for calorie or dietary restrictions;
- the invoking of the existence of a "glandular disturbance" as a cause of obesity. I need hardly add that the patient who is forced to lose weight seldom ever does so.

*We do not advise any reader of 'Cajanus' who might be obese to use these drugs unless with medical advice and under medical supervision - EDITOR.

A NEW PROPOSAL FOR NUTRITION EDUCATION:
AN ANTHROPOLOGICAL PERSPECTIVE

by

Ida Daum*

Introduction

Malnutrition and gastroenteritis have been major problems threatening the health and lives of infants and young children in most developing countries. In Jamaica, they have been estimated to be a contributing factor in most deaths occurring between six months and three years of age.¹² Since we are now at the point where at least some of the causes and effects are known, a great deal of effort has recently been made toward prevention. One such effort has been nutrition education, the focus of which has primarily been directed towards mothers.^{8,14}

Most nutrition education programs include such topics as personal and child hygiene, the importance of maintaining sanitary immediate environments (including one's food and water) and the necessity of adequate food and water.¹⁵ Such programs may be offered through child welfare, antenatal or outpatient clinics, or through general hospital staff, vis-a-vis, nurse, doctor advisement. Unfortunately, the result of such attempts have sometimes been disappointing.¹⁰

In this paper I suggest one possible reason for the past ineffectiveness of nutrition education in Kingston, i.e. the inability of mothers to supply infants with adequate nutrients. Based upon initial research following fifty-one families of infants who were hospitalized for malnutrition and/or gastroenteritis; the data indicates nutrition education, particularly with respect to infants and children, geared solely towards women often neglect the source

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of the power which influences food purchasing, general household finances, and many household decisions, that is, their MEN.

The Population Emphasized: Women

Certainly the tradition in Jamaica and most, if not all, societies, is that an individual's cultural role is largely determined by their sex. For women, this usually has meant having babies, caring for them, etc. This then has made the close maternal-child relationship in nutrition education an inevitable focus.

The over-rapid urbanization of Kingston by migrants from the country, which has resulted for many in poor, squalid, and over-crowded conditions has helped to narrow the central focus of education to women of the lower class. These are the households which appear most at risk.⁷

The attention given to family systems studies among West African groups and Afro-Americans by social scientists, and the idea that women occupy prominent positions in these household systems, and that these systems display various degrees of a matriarch, has more than likely also enhanced the emphasis on females.^{1,3,6,17} The high rate of "illegitimacy" in Jamaica, estimated to be about 76.4% of all live births,² the resulting number of female headed households and the number of the "non-legal" unions have certainly been reinforcing factors. However, the tendency to vilify the black woman (*villains* in the minds of black men, in the minds of others, *heroines*; and *victims* in our own minds) as a castrating matriarch by novelists, and historians has perhaps had the largest of impacts, particularly in terms of instilling this idea in the minds of the general population.^{4,5,18} Data from our research on the social background of families with infants or children who have been hospitalized for malnutrition and/or gastroenteritis in urban Kingston suggest that nutrition education has perhaps been too preoccupied with babies' mothers; that in fact, nutrition

education that excludes men, neglects the very persons with the most potential for relieving such situations as inadequate diets. The idea then of West Indian women as matriarchs, if not held, may have allowed us more clearly to recognize the important role men, babies' fathers play in household diet.

The observations described in this paper are some initial results from an on-going dissertation project, designed to explore and better identify the commonly shared problems of families with malnourished children, and to what extent these problems can be relieved, and perhaps eliminated by non-medical means.

A sample of fifty-one urban infants between the ages of three months and three years who had been admitted to hospital diagnosed as malnutrition and/or gastroenteritis, and their families were followed from date of discharge. Home visits have been made fortnightly, although sometimes more frequently. Observations on the nutritional status of the child, and his/or her general health, assessments of the families' diet, household composition, and general psychosocial and economic circumstances of the families are being recorded. The project began on October 1, 1973, and it is planned to continue for twelve months.

Results

In our sample of fifty-one households, fifteen women (29.4%) are totally dependent on a man, not residing within the household, for family resources, including babies' feed (see table I). Those cohabitating (non-legal) unions number twenty-five (49.3%). This group is also dependent for support on men; In only four of the twenty-five non-legal unions does the woman also work, a decision made by babies' father. Only two women are independent financially, that is, they are unattached, and have jobs to maintain themselves and their families. In these cases of working mothers, a grandmother, relative, friend, or another child looks after the children while the mother works. Inadequate

care on their part is often the cause of subsequent nutritional stress. The important point here however, is that men are the major supporters, in thirty-eight households or 74.5% of these families. Also important is that two men in this sample perform a mother's role; no mother being present. There is no reason to assume this is an unusual finding. Men distribute weekly, bi-monthly, or even less frequent allowances to babies' mother, and in four households (two single family and two cohabitating unions) babies' father regularly purchase the infants feed. The allowance given for babies feed and general care are almost never adequate. Four of the families in this study receive about equal support from other relatives as well as babies' father, and in four other households, although the mother is the primary income earner, baby's father helps. The father then, plays a role in domestic finances in a total of forty-six of the fifty-one families in this study, 90.2%. It is my impression that there is a great deal of flexibility in just who is the primary income earner, that it by no means remains permanent, and is largely dependent on the stability of the male-female relationship.

Table I: Types of Households and Support Networks
of the Families with Malnourished Children

	Total sample		Father primary supporter		Mother primary supporter		Both parents support		Mother primary supporter and father helps		Support equal: father and kin	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Single women households	24	47.1	15	29.4	2	3.9			3	5.9	4	7.8
Single men households	2	3.9	2	3.9								
Cohabitating households	25	49.0	21	41.2			3	5.9	1	2.0		
Totals	51	100.0	38	74.5	2	3.9	3	5.9	4	7.9	4	7.8

60.5% of single women are dependent on a man, 84% of women in cohabitating unions are dependent on a man.

Discussion

A matriarch is a system of social organization in which descent and inheritance are traced through the female line. This means that a woman (mother) is head and ruler of her family and descendants.*^{13,16} If one agrees that control and rule are determined by power and authority, which in turn are determined by money (in our case) or the money making potential, then these women (to whom nutrition education and advice have been primarily directed) have neither. Our data indicates this group has not the ability to exert any control (burdened with sick children, and often unable to work), nor have they the power to protect their children from diets inadequate in calories and protein.

The individuals in this sample are Kingston's urban poor. Most are not members of the organized working class, but rather comprise the group described as "lumpenproletariat" (dispossessed workers). Employment for both men and women is rather intermittent resulting in frequent fluctuations in household income, and occasional dependence on minor illegal activities, or extended kin. During the Christmas Season for example a few women sold decorations to obtain extra cash or picked up some day work. By and large however, the primary supporter is the man-friend, and he is as well an important decision maker. This is not to contradict all that has previously been stated about lower class black household structure - the women in this sample could also be described as "strong" and "capable" in many respects - but rather to emphasize the important supportive role played by their men-friends. I am suggesting then, that although these women are "strong" in many issues they are not dominant, and it is my belief that men are more important with respect to the feeding habits of their

*For a more thorough definition of a matriarchy see "Towards a Definition of matriarchy" by N. Gonzalez. In: *Afro-American Anthropology*. Ed. N. E. Whitten, Jr., and John F. Szwed, p. 231. The Free Press, N.Y. 1970.

babies than has previously been recognized. This is particularly so when the male-female relationship is a "good" one.

Joyce Ladners, in her book *Tomorrow's Tomorrow* (1971) states well the point I am attempting to stress:

"The highly functional role that black female has historically played has caused her to be erroneously stereotyped as a matriarchate and this label has been quite injurious to black women and men. It has caused a considerable amount of frustration and emasculation within black men because it implies that they are incapable of fulfilling the responsibilities for the care and protection of their families. It has also caused certain added responsibilities to be placed on the shoulders of the black woman because the larger societal expectation of her was in conformance with this stereotyped conception."⁹

From previous work conducted in rural areas in Jamaica, the situation appears somewhat different. The concept of "family land" described by Edith Clark¹ gives many at least the security of a home and food. Other anthropologists have discussed the strong support of relatives, particularly the grandmother and extended kin which exist when the economy is based primarily upon agriculture.³ Today the bauxite industry, tourism and industrialization, accounting for most of the country's annual revenue, and the migratory movements of more and more women to the city, together are very likely causing revolutionary changes in certain aspects of domestic life and relations.¹⁹ The final result is a breakdown in traditional kinship network, unemployment, and out of necessity, frequent dependence on unskilled, and too often, undependable males. What looks like matrifocality in these households may simply be the recognition of a situation created by mass migration and urbanization in this group, that is, one in which male roles are not as complete as those filled by females; a result of their economic position. The structures of these

male-female relationships are adaptations to this economic situation, allowing women to obtain the support from more than one male at a time, allowing thus the maintenance of a fairly stable home environment even when work is hard to find. The idea that men are irresponsible, or unconcerned, because of their frequent absence from these households should not be assumed. Although, as I have already emphasized, babies' father is not a great deal better off in his money making potential, he is nevertheless usually free from the extra burden of daily child care. Only ten percent of the mothers in this sample go out to work. In these families the fathers, when unemployed, is sometimes left the responsibility of feeding the baby. The men I have encountered in my follow-ups are interested and concerned about their infants' well being. They are however for the most part ignorant of what baby needs to survive, but have displayed a desire to know.

Approaches to Nutrition Education for Men

A great deal of education thus far attempted has been received via mimeograph sheets of important facts for mothers to know concerning child care and/or various pamphlets distributed at clinics and hospitals concerning the benefits of breast milk versus tin feeds. Women attending clinics could as well be given information in the same form, for babies' fathers, explaining the cost of infant feeds and the quantity necessary on a daily or weekly basis. Fathers sometimes come to hospital to visit children. Why not approach them, along with babies' mothers, concerning the food requirements of their infants, and the consequences for the child if proper feed is not received? Certainly the most effective approach to education to include men would be via public service announcements in newspapers, and on radio and television.¹¹ Men have been excluded for a long time from child care. If this data is a true indication of

the reality and feelings of the times, now seems to be a very appropriate time to include them, since so many of us are re-adjusting to totally new roles, and the implications could be far-reaching in terms of "the family" and male-female relations in Jamaica.

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CAJANAQUOTE

"I would venture the opinion that, collectively, advertising for edibles has made a definite contribution to better understanding of nutrition by children over the past five years."

Augustine R. Marusi
Chairman and President
Borden, Inc.

*'What do ya want
When ya gotta eat sump'in
And it's gotta be sweet
And it's gotta be a lot
And ya gotta have it now?
Lip-smacking, whip-cracking,
Patty-wacking
Inky-nacking,
Zelaba-wacking,
Sculaba-zacking
Cracker-jacking
Cracker Jack!'*

TV ad jingle for
Cracker Jack, a product of
Borden, Inc.

(quoted by the Council on
Children, media and
merchandising, USA.)

NUTRITION NEWS AND OPINION FROM THE CARIBBEAN

WORLD HEALTH DAY MESSAGES

From the Sunday Gleaner, 7 April 1974.

April 7th was World Health Day. The theme for World Health Day this year was "Better Food for a Healthier World." Readers will recall the guest editorial in the last issue of 'Cajanus' (Vol. VII, No. 2) by Dr. Mahler, Director General of WHO. We print below messages from three Jamaican political leaders. We hope to print other messages in the next issue:

The Hon. Michael Manley, Prime Minister, Jamaica

"Malnutrition and under-nutrition together constitute one of the major public health problems in Jamaica. The country is aware of the far-reaching effects of these on our people, especially our young. The future of our country depends on human resources more than any other single factor. We need healthy minds and bodies to think and act.

"The establishment of programmes in nutrition is therefore one of the major considerations of this Administration and in a short time we have made much progress in this direction. But much remains to be done by way of providing facilities for proper nutrition, and in the education of our people in the efficient use of what we produce.

"I therefore, welcome the emphasis being placed on nutrition on World Health Day and the modified World Health theme 'Better Food for a Healthier Jamaica' is most appropriate, as it expresses one of the major goals of this Administration. Our educators have a tremendous task to bring to our people the knowledge of proper preparation and effective preservation of the foods we produce. I urge them to be practical in their approach so that the suggestions and instructions they give can be directly applied to the real life situations of our country. This is crucial if the majority of our people are to understand and benefit from their efforts. The future progress of the well-being of our country will depend a great deal on the measure to which we can properly feed and educate our people."

The Hon. Keble Munn, Minister of Agriculture, Jamaica

"There could hardly be a more appropriate theme for today's Jamaica than that of 'Better food for a healthier world.' This is so not only because of the realisation on our part of the importance of proper nutrition to the nation as a whole but also because we are aware of the rewards to be earned by farmers, processors, manufacturers and distributors in the business of the production and sale of food.

"For many years our farmers struggled at making a living against the background of a population reared largely on imported foodstuff. Today due to world inflation and a greater sense of maturity on the part

or our own people the farmer can sell anything he produces at reasonable prices.

"What we need to do and, indeed, what the officers of my Ministry are doing is to look more closely at the domestic market and to determine the crops and livestock we are best able to produce consistent with nutritional needs. I am happy to note the work being done by the various organisations in educating the public as to the value and methods of preparation of many of our local foods. And I am even more satisfied about the growing acceptance of the idea of buying and eating Jamaican.

"In the broader context, the more protein and quality foods that we can produce the less we will have to import and the more we will eventually be able to export. This combination will not only help to keep our people healthy but to the health of the nations will in the long run contribute balance-of-payments position."

The Hon. Kenneth McNeill, Minister of Health and Environmental Control, Jamaica.

"This year the World Health Organization has chosen as the theme for World Health Day (April 7) 'Better Food for a Healthier World'.

"For us in Jamaica this means 'Better Food for a Healthier Jamaica'. The Government has promoted this idea from the commencement of its administration and a National Nutrition Advisory Council has been established and charged with the development of a national food and nutrition policy and programmes for its implementation. The Council is planning a five-day seminar from May 27-31, during which the elements of such a policy will be collated and discussed and programmes for its execution formulated.

"The work and staff of the Nutrition Unit of my Ministry have also been expanded, and with the Bureau of Health Education they have been working assiduously on efforts aimed at improving the nutritional status of our people through education.

Responsibility

"The promotion of 'better food for Jamaicans' is the responsibility not only of the government but of the farmer, the food industry, the shopkeeper, and the consumer. Unless the farmer is committed to feeding the nation, the food processor to conserving the nutritional value of the food the farmer produces, the shopkeeper to proper storage and the consumer to using it to the best advantages, we will not be successful.

"The consumer must seek to become knowledgeable about the processes surrounding the progress of food from farm to household, and develop a public awareness which will constrain producer, processor, shopkeeper and government agencies to ensure that our food is wholesome, nutritious and adequate.

"Let us all strive to eliminate food wastage, food contamination, and poor eating habits. Let us learn that we can meet our needs with simple Jamaican meals which are often good mixtures and are much cheaper than more exotic foreign dishes."

MEALS FOR SCHOOL CHILDREN IN JAMAICA

By W. J. Branday*

It has been believed for many years that the provision of a meal for school children would be very beneficial to them, and this is a common practice in many parts of the world; in Jamaica, provision of meals for school children was first attempted about fifty years ago, when a group of charitable persons financed the provision of school meals in Kingston, and after some years of effort, this organization began to provide large number of meals per day. The benefit to children was so obvious that in 1944 a Committee was set up to report on the possibility of providing meals for all school children in the primary schools in the island. The Committee found that, even if the cost was only five cents per meal funds could not be found, and it was recommended that meals should be provided on a contributory basis; however few schools seemed interested, and it was not until years later that arrangements were made by Government for a certain number of meals for children in all the schools.

The position in Jamaica is not certainly known; there are infant schools, primary schools, junior secondary schools, all of which are maintained by the Ministry of Education, and a number of private schools, at which fees are paid. The total number of the first two groups is about seven hundred and the number of children who should attend should not be less than one-quarter of the population, or about 500,000, but records suggest that the average number of children who attend schools regularly is much smaller, probably only about one-half of this number; in one parish for which figures have been obtained, the average attendance of children is about sixty percent of the number on the roll. The provision of a satisfactory meal, even for the average number of children who attend regularly, is far more than Government can afford, and inquiry at schools has suggested that meals are provided for only about twenty-five percent or thirty percent of those who attend regularly, and that the great majority of these meals are provided on a contributory basis, in order to help to meet the cost; about ten percent of all meals are given to children free of cost. As stated above, the need by school children for a meal at midday is obvious, but it is impossible for Government to pay for it; only a small number of meals can be provided free of cost; and the majority must be paid for, at least partly. But although all children should get a meal, and would benefit greatly from it, the percentage of children who accept the meals varies from one school to another. It seems that children in a school in a town do not take advantage of the chance of having a meal at school as frequently as children at a school in a rural area; probably, the children at a school in a town

*Dr. Branday is the Medical Officer of Health for the Parish of St. Mary, Jamaica.

are able more often to go home for the meal, or are able to buy food in the town. Inquiry has shown that they are often able to spend more on the food than the meal would cost, but perhaps they prefer the food which they buy, even if it is not nutritionally satisfactory. This suggests that more children could afford to buy the meal than now do so, and that a large number would buy it, if the meal was made attractive to them. Their nutritional state would improve, because the food which they buy often consists of foods which they like, such as bread, biscuits, syrup and sweets, which are not nutritionally as satisfactory as the meal provided.

The success of any scheme for the provision of lunches for school children, that is, the acceptance of the meal by the children, will depend on the provision of foods which the children like, and the attractiveness of the serving of the meal. Interest of the teachers in the lunch scheme will make heavy demands on them and will add much to their already heavy duties; additional staff may be needed, but this will add greatly to the possibility of success of the scheme.

The payment for the meals could be made in kind and not in cash; for example, a child might bring a bunch of bananas or calaloo, or some sweet potatoes, or cassava, and this would pay for the meals, for that child for perhaps a week. Only the school teacher would know if a child had been provided with the meal free of cost; tickets would be distributed by the teacher to all children, who would present them to the cook for the meal.

The 1944 Committee on meals for school children suggested another way in which the cost of the meals could be reduced, that is, by the establishment of school gardens, if conditions in the school permitted, namely, space and sufficient water, either from rain or another source. This would have the advantage that children might learn something about agriculture, which would be useful later in life. It would take time to establish a school garden, probably a year, before the food produced could provide a significant portion of the food used for the meal. The establishment of these gardens would require help and supervision from the Ministry of Agriculture, and would make heavy demands on the time and interest of the teachers.

There is no doubt that the provision of a midday meal for school children will be of immense value to them, and will assist them in learning their lessons far better than they do at present. The conditions which now exist are such that a child cannot take in what he is taught, because he is often hungry and tired. The examination of the position in Jamaica suggests that it might be possible to provide the meals, at least for a much larger number of children than at present, if certain conditions are fulfilled, and it is urged that the matter be considered again by the Ministry of Education, and any other Ministry concerned, in order to try to improve the health and happiness of the children, and to enable them to derive the greatest benefit from their years at school.

SUNFLOWER - AN ORNAMENTAL WITH ECONOMIC POSSIBILITIES*

By J. L. Hammerton**

The sunflower (*Helianthus annuus* L.) is commonly grown as an ornamental, but large-flowered forms are cultivated in many parts of the world as an oil-seed crop. The oil is edible and is used in paints and as a lubricant. The seed kernels can be eaten raw or roasted and are rich in protein. The residue remaining after pressing out the oil is a high protein livestock feed.

Cultivars vary widely: plants may grow to more than twelve feet with flower heads up to one-and-a-half feet in diameter, but dwarf types - growing to about four feet with flower heads six inches across - have been developed. The crop is not suited to wet conditions, but can do well under relatively dry conditions, provided rainfall is regular throughout growth and the soil is deep.

Small plots of four cultivars introduced from Taiwan by Dr. Y. H. Yang (formerly Deputy Director of CFNI) were recently harvested in Jamaica. Plant heights were between five to six feet, and most plants produced only one flower head, up to eight inches across. A few plants gave one or two additional small flowering heads. Time from sowing to harvest was thirteen weeks. It would be unrealistic to estimate yields from such small plots, but the trial indicated that the crop can grow well in dry, southern St. Catherine Plain of Jamaica. The only problem proved to be leaf-eating insects, but these were controlled by three sprays of Malathion. If grown on a large scale, weed control might prove troublesome, and more serious insect and disease problems might arise. The crop may be of interest to low rainfall territories anxious to reduce livestock feed imports.

CAJANAQUOTE

"Of the 600,000 professionals at University level in Latin America only three percent are employed in agriculture which absorbs forty-six percent of the total labour force."

Tibor Mende
In his book - "From Aid to Re-colonization: Lessons of a Failure."
(Published by Harrap).

*This piece is taken from the Extension Newsletter of the Department of Agricultural Extension, Faculty of Agriculture, UWI, St. Augustine, Trinidad.

**Dr. Hammerton is Research Fellow, Agronomy Research Unit, UWI, St. Augustine, Trinidad.

NEWSPAPER CLIPPINGS

OUR EATING HABITS NEED REVISING

From the Advocate-News, Barbados, 27 February 1974.

The decision to cut back on the importation of English potatoes gives us an opportunity to make the most use of our available local food crops such as sweet potatoes and breadfruit.

It might be claimed by some housewives that the English potato permits them to prepare a greater variety of dishes but it might be a case of our not showing the same sort of initiative in using the lowly sweet potato.

Today we have available a variety of recipes using the sweet potato as the main ingredient and a number of these are very tasty.

During the days of World War II, when the ships bringing foodstuffs to the island did so at great risk, Barbadians were encouraged to concentrate more on the growing of the sweet potato to have more local food available. At that time we had not yet reached the stage of thinking seriously about a diversified agricultural programme. But so great was the response to the cultivation of the sweet potato that they soon became associated with the agricultural expert who had encouraged their increased cultivation in the island.

The expert was Dr. John Saint (later Sir John) and Barbadians jokingly referred to the sweet potato then as 'Dr. Saint's pills'.

Faced as we are with our present economic problems and the need to cut down on imports and concentrate more on local products, we might not care to show the same sense of humour these days in relation to the sweet potato. If anything, there still seems to be a problem of getting much of our sweet potato crop reaped.

One plantation owner has already warned that if people were not willing to come to the plantation and buy and reap the potatoes he had planted he might well be forced to plough them back into the soil.

One of the main complaints about eating too much sweet potato is that it is a food heavy in carbohydrates, and in a country where there are so many known diabetics many people would only be eating themselves into the grave if the sweet potato played too great a part in their diet.

But there is greater opportunity today for these people to stick to their diets, and have the necessary variety even though we must admit that any special diet which does not involve a heavy percentage of carbohydrates can be most costly with food prices being what they are today.

However, those for whom the sweet potato poses no adverse health effects can serve it in a number of tasty dishes.

Quite recently a lot of cooking ideas have been forthcoming to encourage the use of locally grown foods. Today's housewife is a lot more food-conscious than her mother was. One reason for this is that ideas on nutrition as part of domestic science and home economics courses have been passed on to many girls attending the island's schools.

With greater attention being paid to what we can do to help feed ourselves we will not only cut down on our imported food bill but would also give a further boost to the agricultural endeavours in the country.

There was a time when, from all appearances, we were quite happy to import our food. We still need to import much of this. Some might even claim that we import too much of it. But the inflationary spiral and the fuel crisis have served to show that if we rely on other people to provide our food for us our food bill is going to be so high that for people in the nation, work might just be an exercise of getting money to buy food, with little remaining for anything else.

The sophisticated eating habits which we have been cultivating over the years are now in need of some revision out of sheer necessity. We do not believe, however, that we are yet in a position to impose a total ban on certain imported foods as is being done in a number of other Caribbean territories.

We must first improve our agricultural output to be able to do this. And whatever might be the complex problems involved, including those of marketing, we must be prepared to move beyond belly-aching and getting down to the business of facing the challenge. It is still true that if nothing is ventured, nothing is gained.

NUTRITION DRIVE MUST BE SUSTAINED

From the Advocate-News, Barbados, 4 April 1974

The Government is making positive efforts, both preventive and curative, to attack malnutrition in Barbados. This assurance was made by the Minister of Health, Dr. Rameses Caddle at the opening ceremony of an Applied Nutrition Training Course currently in progress.

Supplying figures to demonstrate progress already made, the Minister pointed out that in Barbados, the death rate of seven per thousand among malnourished discharged from hospital and followed up at home over the past six years is much lower than that of published figures for other developing territories.

Malnutrition has ill effects on infant development, on the working efficiency of adults and consequently on the productivity of the country, so that any programme which attacks this debilitating illness is of the utmost importance.

The idea of malnutrition which first springs to mind is that of not having enough to eat and the present world food shortage and the news of starvation with ensuing death to hundreds of thousands in India and Africa are the most dramatic instances available.

But malnutrition is far more than this, since health is also much more than being alive. It is an alarming fact that a vast number of people have enough to eat but still suffer malnutrition. They eat in quantity but the quality and balance of their diet is not sufficient to provide the total needs of their bodily health. As a natural corollary, mental health and intellectual capacity also depend largely on proper nutrition and physical health.

Proper Diet

This is why the Minister emphasised that his Ministry in its attack on malnutrition in Barbados aimed to:

- Improve standards of nutrition;
- Obtain the optimum reduction in the incidence of maternal and infant mortality;
- Increase community participation in the betterment of their health;
- Obtain optimum reduction in the incidence of those diseases for which specific and preventive techniques are available; and
- Integrate the dispensation of preventive and curative health and to improve institutional and non-institutional care.

The Minister chose diplomatic language when he said that it has been established that there is a positive correlation between high infant mortality and nutritional deficiencies. Put bluntly, this means that children who are not well fed die.

Another awful consideration is that many ill-fed children do not die, but will exist without ever being healthy or able to realise their full potential.

It was also pointed out that the burden of malnutrition falls on the poor who spend a greater proportion of their budget on food. So increases in food prices in relation to income can be expected, at that marginal level of nutrition, to increase disease and death.

One can promise oneself clothing, shelter, education, and a hundred and one other things that enhance the quality of life; but to survive one must eat and the cost of food in relation to one's income determines whether one survives or really lives a healthy life.

Conditions in Barbados' agriculture, trade, education and finance operate to ensure or deny proper nutrition. We import vast quantities of the foods we consume and thereby feel the effects of inflation in the countries which supply

us. This may result in the cost of basic foodstuffs exerting unbearable strains on family budgets.

Social Services

Financing the administrative and social services puts further burdens on already slender resources thus reducing the amount available to spend on foods. Lack of knowledge about diet can result in what little money is available for food being spent on items which are not of prime nutritional value.

Increased agricultural production and diversification can reduce trading imbalance as well as provide more healthful ingredients for our meals.

Family planning is also of prime importance in the scheme of adequate nutrition for our nation. Put simply, if there are fewer mouths to feed the available cash will go further in feeding our people better.

Already the Applied Nutrition Programme has reduced the incidence of malnutrition in our island. A campaign to show us how we can feed ourselves better from our own resources has been continuing for some time. Much emphasis has been placed on the use of cheap ingredients to cook delicious foods full of nourishment.

But it is a sobering thought that when the incentive of cheapness is employed it is only on a comparative basis. For instance, peas, beans and fish recommended as cheap sources of protein, can only be considered cheap when compared to more expensive beef and other meats.

From the foregoing it is obvious that there is no easy way to solve the problems of malnutrition, but its effects on present and future generations can be too grave for us ever to let up in our fight to achieve better health through better eating.

CAJANAQUOTE

Only when food education is combined with family planning can we expect to achieve maximum use of family budgets and maximum improvement - both physical and mental - of the quality of human life.

In the richer countries, only twenty to thirty percent of family income is spent on food, but at the other end of the scale as much as sixty to seventy percent is spent on food. This means a very tight family budget. Both family planning and food advice are desperately needed.

*K. V. Bailey
In: 'Nutrition and Family Health'
Written for World Health Day, 1974.*

CFNI News

TWO NEW STAFF MEMBERS

Dr. Miguel Gueri joined CFNI on 1 April 1974. Previously he was medical officer of health for the Parish of St. Catherine, Jamaica. Before that, from 1968 to 1970, he was a research fellow in the Department of Social and Preventive Medicine at the University of the West Indies.

Dr. Gueri qualified as a medical doctor from the University of Granada in Spain. He has a diploma in Public Health and a M.D. from Granada, and a Master in Public Health degree from Tulane University.

Dr. and Mrs. Gueri and their children will live in Trinidad as Dr. Gueri is based in the Trinidad Centre of the Caribbean Food and Nutrition Institute. He will work primarily on the evaluation of nutrition intervention programmes.

Miss A. I. Patricia Maynard was born in Charlestown, Nevis, where she lived until 1943 when she moved to Antigua. She did voluntary nursing at Holberton Hospital for one year and then went to London for formal training in General Nursing and Midwifery.

Pat returned to the West Indies, and came to work in Jamaica in 1959, after doing a short spell of field work in St. Kitts. After working for six months at the University Hospital of the West Indies, Pat joined the Human Nutrition Research Scheme and did field survey work for two years. She then went to McGill University in 1962 to pursue a course in Public Health and specialized courses in Nutrition and techniques in interviewing and data collection. She received a diploma in Public Health Nursing from McGill University on completion of this course.

On her return to Jamaica she again worked with the Human Nutrition Research Unit headed by Miss Helen Fox of the Scientific Research Council until 1973. During 1973 and at the beginning of 1974 Pat worked for a pharmaceutical firm until finally joining the staff of the Caribbean Food and Nutrition Institute. She will be particularly involved in education in nutrition for health professionals and auxiliaries.

LETTER TO THE EDITOR

From Dr. Dana Raphael, 666 Sturges Highway, Westport, Connecticut, USA.

Dear Sir:

"Wright and Spock"

Sorry about that reprinted article by Thomas Wright, Liebfraumilch, ['Cajanus' Vol. VII, No. 1 (1974) p.21]. I am sure Mr. Wright means well, but the misinformation he reports is really sad. We must stop perpetuating such simplistic arguments.

Imagine, bottle feeding and Dr. Spock are responsible for the mess of our world. All the malnutrition, all the efforts for peace, all the horrors of war, to say nothing of the positive flights to the moon and every new scientific discovery Wright would lay at the roots of bottle feeding. Some of the peace activists were breastfed babies brought up rather strictly and no doubt many of the young men and women who bombed children all over Vietnam were brought up most permissively.

I have shown elsewhere that Spock was one of those writers who followed the cultural patterns very well no matter which way they went. When the atmosphere was permissive he said, "let the baby do his own thing". When Sputnik hit the world, he changed his advice and said, do what is comfortable for the mother. He is currently a very creative and dedicated man and has in no way 'publicly withdrawn all his former views'.

I think this kind of impressionistic nonsense should not be taking up precious space and paper in a valuable scientific journal.

Peace.

Yours sincerely

Dana Raphael

EDITORIAL

And thus the native hue of resolution
Is sicklied o'er with the pale cast of thought,
And enterprises of great pith and moment
With this regard their currents turn awry,
And lose the name of action.

'Hamlet'

by William Shakespeare

We publish in this edition of 'Cajanus' three resolutions. One comes from the 1974 World Health Assembly; it is on breastfeeding, "the ideal feeding" (page 120). The two other resolutions come from the 1974 Caribbean Health Ministers' Conference. The first is on the problem of gastro-enteritis and malnutrition, "one of the principal causes of preventable ill-health and loss of life among children under two years" (page 142); the other is on maternal and child health services (page 143).

That babies are best breastfed is so obvious that one doubts the resolution of a society that still argues over the man-made obstacles to successful lactation. If we do not want our children to be "sicklied o'er" with the pale cast of inadequate feeding, remaining stunted and wasted survivors of a distorted society we must surely re-shape that society. The resolution of the World Health Assembly can be translated to local action by first putting into effect the recommendations of the "Guidelines to Young Child Feeding in the Contemporary Caribbean" drawn up in 1970 by leading paediatricians, obstetricians, nutritionists and public health workers in the area. (Copies of these Guidelines can be obtained from the editor of 'Cajanus').

The resolution of the Health Ministers' Conference on the problem of gastro-enteritis and malnutrition accepts a strategy and plan of action especially drawn up for the Ministers at a meeting held last January in St. Vincent. We will publish this document in our next issue.

Both the "Guidelines to Young Child Feeding in the Contemporary Caribbean" and the "Strategy and Plan of Action to Combat Gastro-enteritis and Malnutrition in Children Under Two Years of Age" were born out of thought and compassion. For Hamlet, that tortured intellectual, thought inhibited action. Can we ensure that from thought arises resolution and that effective action stems from this resolve?

THE EDITOR

TOPICS AND COMMENTS

**INFANT NUTRITION AND BREAST-FEEDING - RESOLUTION OF THE
TWENTY-SEVENTH WORLD HEALTH ASSEMBLY (1974).**

The Twenty-seventh World Health Assembly,

Reaffirming that breast-feeding has proved to be the most appropriate and successful nutritional solution for the harmonious development of the child;

Noting the general decline in breast-feeding, related to sociocultural and environmental factors, including the mistaken idea caused by misleading sales promotion that breast-feeding is inferior to feeding with manufactured breast-milk substitutes;

Observing that this decline is one of the factors contributing to infant mortality and malnutrition, in particular in the developing world; and

Realizing that mothers who feed their babies with manufactured foods are often unable to afford an adequate supply of such foods and that even if they can afford such foods the tendency to malnutrition is frequently aggravated because of lack of understanding of the amount and correct and hygienic preparation of the food which should be given to the child,

1. RECOMMENDS strongly the encouragement of breast-feeding as the ideal feeding in order to promote harmonious physical and mental development of children;
2. CALLS the attention of countries to the necessity of taking adequate social measures for mothers working away from their homes during the lactation period, such as arranging special work timetables so that they can breast-feed their children;
3. URGES Member countries to review sales promotion activities on baby foods and to introduce appropriate remedial measures, including advertisement codes and legislation where necessary;
4. URGES the Director-General to intensify activities relevant to the promotion of breast-feeding, to bring those matters to the notice of the medical profession and health administrators and to emphasize the need for health personnel, mothers and the general public to be educated accordingly; and
5. REQUESTS the Director-General to promote and further support activities related to the preparation and use of weaning foods based on local products.

Fourteenth plenary meeting, 23 May 1974.

MAN OR PIG?

By Sicco L. Mansholt*

Whatever happens in the world, whether there will be food shortage or full supply, certain changes must be made in agricultural policy. I did not succeed in bringing the Council of Ministers of the European Community to those decisions which would have given us a totally new social and economic agricultural structure. They preferred to deal with the market, and that of course has had its impact on the total pattern of production. The Common Market's agricultural production is based on the summing up of existing national production before 1958.

What we proposed was, by means of a restructuring of agriculture, to adapt production to real needs, and that has not yet been done. Thus we produced in this static situation products that were not needed, butter mountains, for example, products that could have been better produced elsewhere, say in the developing countries.

We are, however, entering a period of food shortages; it could be an era. I will not say that in the very short run there will be a great lack of food. Much remains to be improved in the field of better distribution, but, for example, the situation is already grim for those who cannot pay high prices for food and in countries like India, Bangladesh and those of Africa and even South America, millions and millions have great difficulties regarding food supply. This will be much worse in the future unless we organize and take measures quickly.

In any event, it will be a tremendous task for mankind to increase food production on a parallel with population growth and that much harder to raise per caput supply, particularly when we are confronted with other deficiencies, like energy. Thus, world food production cannot be viewed separately from all the other problematical elements which must be faced. For instance, do we have the investment capacity for creating much more energy? Energy demands, at current rates, will double every twelve years in an exponential way, which reduces the present oil crisis, this little ripple in our economy, to almost nothing compared with what we may expect in twelve to fifteen years.

When, in addition, we see that almost nothing is done about the problem of pollution, air, water and sea; that we will perhaps be forced to deforest the Amazon, the Congo, and Indonesia to increase food supplies; that we are exhausting fresh water, and that the desert is increasing, I am convinced that we are all on the wrong track. We are running in the wrong direction, in a world that needs international organizations with powers beyond recommendations to national entities always looking after themselves, and we are very far from that utopian idea of decision-making on a worldwide level, though the technical basis of problem-solving is not entirely lacking.

*Sicco L. Mansholt, former Netherlands Minister of Agriculture, Fisheries and Food, has been President of the Commission of the European Economic Community. This article first appeared in *Ceres*, May-June 1974, Vol. 7.

Meat for the rich

The only international activity where we (mankind) are very well organized is in the enterprises which by means of multinational corporations have great decision-making power but going in the wrong direction, that of growth for the rich part of the world. The multinationals' activities are increasing, not closing the gap.

In Europe, we will have to produce agriculturally as much as we can, but also what is needed. Our influence, however, will not be decisive. Within five or ten years infrastructural weaknesses will develop, because I do not believe that statesmen will make available enough research, education and investment capital to increase world food production, and then, when it will be too late, only great hunger and starvation will perhaps change the attitude of our politicians. It will then be a question between man and pig. Until now we have chosen in favour of the pig and we have let man starve in Africa. There was enough food, but people wanted to eat meat and we all know that one ounce of meat is a week's diet for a man in Africa, yet we chose the one ounce of meat. Government policy, and even the policy of the Common Market, is to produce more meat because people, in their affluence, want to eat more meat. Here we are facing conflict, and at a certain moment we will have to make a choice. Agricultural policy will have to be altered on a worldwide basis.

In general, we have to orient agricultural policy toward a better division of labour in the world. When, for example, fat production can be done better and at a lower cost in developing countries, it should be done there. When we do great harm to the sugarcane producers in the poor countries, we have to open our market for sugar and reduce our production in Western Europe.

I hope that at the World Food Conference in November we will deal with these problems. That means preserving nature and the ecological balance. That means less in the rich and more in the poor countries. That means a choice between pig and man; man, not the pig.

FOOD, AN ESSENTIAL SERVICE*

By G. M. Sammy

"Throughout this conference, agriculture and food have been treated on a strictly 'profit and loss' basis. We seem to ignore the fact that 'food is one of the basic necessities of life', and therefore must occupy a special place in the development of any society. It must be treated as an essential service to the community, the same as we treat water. We do not argue about the 'profit and loss' aspects of providing water for the community. We are

*These are the introductory remarks given by Dr. Sammy on presenting his paper "The Scope for the Development of Food Processing" at the Ninth West Indies Agricultural Economics Conference, 3-10th April, 1974, Kingston, Jamaica.

mainly concerned with providing water of wholesome and potable quality and ample quantity necessary for comfort and health. As an essential service we do not allow entrepreneurs to speculate on the profitability of our water supplies. We deem it an essential and necessary service and take control of it ourselves and within limitations provide a service such that wholesome water is within the reach of all our citizens.

"Is it all that difficult for us to equate water to food? As water is essential to the health and well-being of all our citizens, so is food."

DRUGS IN BREAST MILK*

Nursing mothers often ask their doctors if medicines they are taking can harm their infants. Data on the pharmacology of drugs in breast milk are surprisingly incomplete, but physicians should be aware of some general principles and a few specific precautions.

General Considerations

Almost any drug present in the mother's blood will also be detectable in her milk. The concentration in milk depends on such factors as the concentration in maternal blood, the lipid solubility of the drug, and its degree of ionization. The amounts of most drugs in breast milk are very small.

The infant's immature kidney and liver function can delay excretion or inactivation of drugs, so that continuous input from mother's milk could lead to clinically important concentrations of some drugs in the infant's blood. In addition, since the intestine of the newborn infant permits absorption of undigested macromolecules (W.A. Walker and R. Hong, *J. Pediatr.*, 83:517, October 1973), the breast-fed infant may become sensitized to trace amounts of drugs in milk. If the nursing mother's kidneys are not working well, drugs that would otherwise be present in small amounts may appear in her milk in much higher concentrations.

Alcohol

Medical Letter consultants believe that nursing does not contra-indicate even a moderate intake of alcohol. The concentration of alcohol in the mother's milk is generally about equal to the concentration in her blood. Even the combination of a high blood level with a large feeding should produce no symptoms in the infant, except possibly if the mother is a severe chronic alcoholic who can tolerate very high blood concentrations.

*Reprinted, with permission, from *The Medical Letter on Drugs and Therapeutics*. Published by the Medical Letter, Inc., 56 Harrison Street, New Rochelle, N.Y. 10801.

Aspirin

Aspirin appears in breast milk in moderate amounts. It can produce a bleeding tendency either by interfering with the function of the infants platelets or by decreasing the amount of prothrombin in the blood. The risk is minimal, however, if the mother takes the aspirin just after nursing and if the infant has an adequate store of vitamin K.

Antithyroid Drugs

A mother receiving therapeutic doses of *radioactive iodine* should not nurse; the amount of isotope that appears in breast milk is sufficient to destroy the thyroid gland of the infant. Amounts of radioactive iodine used for such diagnostic tests as radioactive iodine uptake are much smaller, but there is little data on the safety of such amounts of radioactive isotopes for young infants. *Iodides* pass into breast milk in small quantities but could possibly cause either hypothyroidism or goiter in the infant (Medical Letter, Vol. 12, p. 61, 1970). *Propylthiouracil* reaches a higher concentration in milk than in the mother's blood; it could inhibit the activity of the infant's thyroid gland.

Antimicrobial Drugs

Penicillin in breast milk may increase the risk of sensitivity reactions in later life. *Chloramphenicol* appears in breast milk in amounts that are probably too small to cause the "grey baby syndrome" but might harm the infant's bone marrow. *Tetracyclines* in breast milk could theoretically cause mottling of developing teeth in the nursing infant, but these drugs form complexes with calcium in milk and therefore are probably not absorbed by the infant; it is not known whether hypocalcemia could be caused in this way. Haemolytic anaemia may be associated with the presence of *nalidixic acid* or *sulfonamides* in breast milk (C.S. Catz and G.P. Giacoia, *Pediatr. Clin. North Am.*, 19:151, 1972). Moreover, any antimicrobial agent in breast milk is likely to alter the bacterial content of the infant's intestinal tract, and normal flora may be important to the early development of the immune system (W.A. Walker and R. Hong, cited on page 123).

Corticosteroids

These drugs appear in breast milk and could suppress growth, interfere with endogenous corticosteroid production, or cause other unwanted effects. Mothers taking pharmacological doses of corticosteroids should be advised not to nurse.

Methadone and other Narcotics

Although opioid drugs are detectable in breast milk and theoretically could lead to addiction in the newborn infant, the amounts in milk are so small that this seems unlikely. The average intake of methadone by a nursing infant whose mother is maintained on the drug was estimated to be only 57 mcg per day, an insignificant dose (M.J. Kreek, in B. Stimmel, ed., *Heroin Dependency; Medical, Economic and Social Aspects*, New York: Intercontinental Medical Book Corp., in press, 1974). Peak levels of methadone can be avoided by giving the mother her daily dose after the infant's evening feeding and giving a supplementary bottle for the next feeding only.

Oral Contraceptives

No harm to nursing infants has been documented from oral contraceptives but, as with most other drugs, the long-term effects on infants of several months' intake of oral contraceptives in breast milk have not been studied.

Sedatives and Anticonvulsants

In animals *phenobarbital* is present in breast milk in high enough concentrations to increase the activity of drug-metabolizing enzymes in the liver (J.R. Fouts and L.G. Hart, *Ann. NY Acad. Sci.*, 123:245, 1965). In the infant this increased activity may affect the metabolism of other drugs the mother is taking, or of the infant's endogenous corticosteroids, or have other undesirable effects. *Diphenylhydantoin* can also induce liver enzymes. There is one report of lethargy and weight loss in a nursing infant whose mother was taking *diazepam* (M.J. Patrick et al., *Lancet*, 1:542, 1972).

Other Drugs

Caffeine reaches detectable levels in the blood of nursing infants, but the concentrations are probably too low to have any pharmacological effect. *Anticancer drugs* can cause bone-marrow depression in nursing infants and should be considered a contraindication to breast feeding. *Anticoagulants* in breast milk have been reported to cause bleeding in the infant, sometimes severe (J.A. Knowles, *Drug. Ther.*, 3:57, 1973). *Atropine* may appear in breast milk in concentrations high enough to cause anticholinergic effects in infants, who are very sensitive to atropine, probably because of immaturity of the motor end-plate. Ergotism has been reported in breast-fed infants whose mothers were treated with *ergot alkaloids*. Thrombocytopenia can occur in the nursing infant when the mother is taking *chlorothiazide* or *quinine*. *Reserpine* may produce lethargy, diarrhea, and enough nasal stuffiness to interfere with the infant's respiration.

Conclusion

During lactation, drugs should be avoided as much as possible since there is little information on harmful effects on the infant, especially over a period of several months. A physician who prescribes a drug for a nursing mother should consider whether the benefit to the patient outweighs a possible danger to the infant.

NUTRITIONAL DEFICIENCY AND MORTALITY IN CHILDHOOD

By R. R. Puffer and C. V. Serrano (Bol. Of. Sanit. Pan-am., 1973, v. 75, No. 1, 1-30 - in Spanish)*

"In the Inter-American Investigation of Mortality in Childhood carried out in twenty-five different areas in fifteen projects in the Hemisphere in the years 1968-1972, 35,095 deaths were investigated through the study of hospital and autopsy records and through interviews conducted in the homes of deceased children under five years of age....

"Of the 35,095 deaths of children under five years of age in the fifteen projects, 19,994 or 57.0 percent were found to be due to immaturity or nutritional deficiency as underlying or associated causes. In several areas two-thirds of the deceased children had such evidence of increased vulnerability to disease and high risk of death....

"The type of nutritional deficiency responsible for deaths under five years of age was analyzed for the first time. Protein malnutrition, or kwashiorkor (category 267 of the *International Classification of Diseases*), was assigned as a cause of 13.1 percent of the total deaths from nutritional deficiency in the thirteen Latin American projects, and nutritional marasmus (category 268) in 21.4 percent. The roles of the various types of deficiency were shown first for the thirteen projects and then for the projects combined. The rates for all types combined were highest at two and three months of age, and then declined in the older age groups.

"While mortality from protein malnutrition increased to the highest rates in the second year of age, the rates for nutritional marasmus reached a peak at two and three months of age and then gradually declined. Some of the survivors of nutritional marasmus probably later developed protein malnutrition and thus the damage was laid in this early period of life.

"Study of the relationship of nutritional deficiency as associated cause of death to three broad groups of underlying causes in the thirteen Latin American projects (excluding neonatal deaths) revealed the synergistic action of infectious diseases and nutritional deficiency. The latter was an associated cause of 60.9 percent of deaths from infectious diseases, compared with 32.7 percent of deaths from all other causes."

*This review is extracted from the English summary of the paper.

HUNGER AND MALNUTRITION IN THE WORLD TODAY*

by

J. M. Bengoa**

Hunger and malnutrition are firmly rooted in patterns of nature, culture and food availability, as well as in socio-economic conditions. Interchange of food between continents over the last four centuries has modified the traditional food habits of certain populations. Generally speaking, such interchanges bring advantages rather than disadvantages, but the resulting picture has its light and shade. One example is South America, a sub-continent that throughout its history has contributed to alleviating the hunger of other countries by providing such basic foods as maize, potatoes and cassava, while foods such as wheat and milk imported from Europe, although of much better nutritional value, are enjoyed by only a privileged minority.

Malnutrition is also a matter of geography. Soil, climate and rainfall influence the type of food crops that are grown. The most advanced countries - with some exceptions - are in fact those that have the better soil, a more regular rainfall and more moderate climatic conditions. Many tropical areas are deserts or semi-deserts with prolonged droughts followed by catastrophic floods. It is not by chance or for purely socio-economic reasons that the consumption of animal proteins is five times as high in temperate zones as in the tropics. In actual fact, three-quarters of the world's cattle are raised in the developing countries, but these animals grazing in tropical areas produce only one-fifth of the world's milk and one-third of its meat.

*This article is reprinted from "World Health", February-March, 1974.

**Dr. Bengoa is Chief of the Nutrition Unit of the World Health Organization.

In the geographically depressed areas, not only are children malnourished and adults tired and old before their time, but even the dogs are emaciated and famished. Livestock wander hither and thither in search of pasture and water; the soil is hard, dusty and cracked by drought. In short, there is pervasive under-nourishment of all living things. To aggravate matters, these depressed areas suffer the worst floods, cyclones and other natural disasters.

In any given year, about forty great natural disasters occur in the world. To recover from any one of them may take years. A few fortunate countries escape them, but many face a sequence of tragic catastrophes with overlapping effects.

These calamities should not be considered inevitable and fatalistically accepted. Many are predictable and some preventable. There is no excuse for folding one's arms and awaiting miracles.

Technological progress in agriculture is considerable, but any benefits depend on the extent to which man can make use of the new advances. The world's nutrition problems cannot be solved just by increasing food production, nor is any action taken by health services in itself sufficient to improve the nutritional status of a population. It is not enough to improve the nutritional status of a population, just as it is not enough to prevent deaths. What is required is a combined and energetic programme with support from various social disciplines, as well as firm political decisions aimed at raising the standard of living in developing countries.

We are now witnessing a marked decline of mortality in children under five. In some countries the decline is impressive, and might even suggest that nutritional conditions are improving rapidly. Careful consideration, however, shows that this is not so. It is now well established that the decline

is due more to specific public health action in preventing deaths than to any improvement in the standard of living, including general nutritional conditions. In developing countries, the present situation is very different from that of the developed countries thirty or fifty years ago, where the drop in mortality was due mainly to an improvement in the standard of living.

It is estimated that in Latin America 1,000,000 children are at present in a severe state of malnutrition and 10,000,000 are suffering from moderate malnutrition. In Africa, about 3,000,000 children are affected by severe malnutrition and 16,000,000 by moderate malnutrition. In Asia, the corresponding figures are 6,000,000 and 64,000,000.

Taking the world as a whole, about 10,000,000 children are at great risk of death, and, even if treated, one-third of them would probably still die from hunger and malnutrition. In addition, the condition of 90,000,000 children with moderate forms of malnutrition may suddenly be aggravated by an infection.

The most common form of malnutrition is what is called protein-calorie malnutrition, or PCM for short. It actually is undernutrition because of lack of food. The tragic fact is that if all the food now available were distributed equitably in proportion to need among countries and socio-economic groups, not one single child would be suffering from malnutrition. There is enough food in the world today; it is just not distributed according to need.

The quantity of food consumed is one part of the problem we face. The other part is its quality. Surprisingly, of the 3,000 or so edible plants available on the earth only 200 or 300 are consumed, and many communities in the world are subsisting on only two or three staple foods.

It is estimated that several hundreds of thousands of children become blind every year for lack of vitamin A in the diet. This is particularly serious in South East Asia, but it is not rare in Africa and South America.

The lesion developed by vitamin A deficiency is called xerophthalmia, which in some cases may destroy the cornea of the eye.

Nutritional anaemia is widespread all over the world. It is more serious and of greater social significance than is generally realized. In South America, iron-deficiency anaemia has been found in five to fifteen percent of men and ten to thirty-five percent of women. Even in the United States of America it is highly prevalent.

In Africa, six to seventeen percent of men and fifteen to fifty percent of women (Bantus of South Africa excepted) have been found to suffer from iron deficiency. In Asia, about ten percent of men and twenty percent of women (up to forty percent among pregnant women) are anaemic. In Europe, the prevalence of iron deficiency anaemia in women is estimated at between ten and twenty-five percent.

In some areas of the world, one to five percent of the population are affected by endemic cretinism (mental retardation) because of a lack of iodine in the diet.

Pellagra, due to a deficiency of niacin, occurs sporadically in various parts of the world, and is still prevalent in some parts of western Asia and southern Africa.

Rickets in infants and young children is still prevalent in some subtropical countries, particularly in North Africa.

Beriberi, due to vitamin B₁ deficiency, and scurvy, due to vitamin C deficiency, are now relatively rare.

The real significance of malnutrition in its diversified forms cannot be conveyed simply by quoting the results of prevalence studies. The problem is too complex for that. To begin with, two, three or more of the conditions described above may occur simultaneously; this is relatively frequent in many

developing countries. Children suffering from PCM and at the same time from anaemia and some vitamin deficiency are frequently found in many areas. What is more, the children affected by several nutritional deficiency conditions are often affected at the same time by infectious diseases. Indeed, it has been estimated that many two-year-olds suffer from some infection or other for twenty-five to thirty percent of the time.

A typical example of mere survival is a two-year-old South American child from the poorer class who has had six attacks of infection of the eyes, five attacks of diarrhoea, ten infections of the upper respiratory passage, four attacks of bronchitis, measles followed by broncho-pneumonia and an episode of stomatitis. In twenty-four months, this child has had nearly thirty attacks of illness and has had one infection or another for about a third of his life. His diet has been inadequate, with the result that each infection has led to loss of weight from which he has never been able to recover completely. At two years of age he is almost a year behind in physical development.

Thirty years ago a child with such a history would no doubt have died. Nowadays, he may well be surviving because of at least minimal care during severe episodes. In many parts of the world it is becoming common to see pre-school children like him, of indefinite age, obviously physically underdeveloped, withdrawn, wearing an expression of indifference, lost to the outside world.

A child of six who at first sight may seem to be three because of physical underdevelopment clearly cannot be compared in behaviour and learning capacity with a normal child of six. Equally, he cannot be compared with a normal child of three. He is another being altogether, with his own biological and behavioural characteristics, and it is difficult to assign a strict developmental age to him. Scientific writers have recently begun to use

special terms for such children. It is said, for example, that malnutrition during the first years of life "distorts the normal symmetry of size and body", leads to a "perversion of development", produces "a disharmonic and retarded development", creates a "disproportionate child" or is responsible for "lack of balanced growth".

In this context of survival should be included difficulties in learning and in psychological and social adaptation. Between the child who has recovered completely and the survivor who has simply got by, there are an infinite number of intermediate stages.

Another important fact is that in addition to the many severely or moderately malnourished children, there are an even greater number with a poor diet, some degree of growth retardation, lowered learning capacity and a permanent feeling of dissatisfaction and hunger. They always seem tired and generally live in very poor hygienic conditions. They are, in a word, both witnesses to and participants in the social deprivation syndrome, so well described by Ramos Galvan.

The behaviour of these children in the future of society is unpredictable. In nutritional surveys in developing countries, they are classified as "apparently healthy" because they are compared with children who show frank clinical evidence of being malnourished. These "apparently healthy" children are in the majority in many developing countries; they live under a permanent risk of falling into a more or less frank form of malnutrition. They are subject to a continuum of stress of which incidents of severe malnutrition are only the more dramatic side-effects. They belong to a generation which may never achieve, either physically or intellectually, what Brock terms "their genetically installed potential".

Finally, by contrast, in many societies there are groups which indulge in an excessive intake of food and are affected by quite different forms of malnutrition. They stand, so to speak, as a symbol of the great disparities that exist between people all over the world.

CAJANAQUOTE

One of the main reasons for the present confusion (about the assessment of the state of nutrition) is oversight of the fact that it is dynamic and not static. Account must be taken of the fact that the state of nutrition of the individual subject in large part is a resultant of physiologic processes and therefore that a wide range of adaptability to varying circumstances is possible. "Primary" malnutrition, which is the result of dietary deficiency must be contrasted with "secondary" malnutrition, attributable to other causes, such as disease of the gastro-intestinal tract or other organs. There are at present no sufficient physiologic criteria of adequacy of nutrition in many of its aspects. Consequently, there is little wonder that so much variability exists in studies of the incidence of malnutrition.

D.W. Wilbur
Progresses in Internal Medicine II,
Nutrition Arch. Int. Med (1936)
446-471.

THE REAL SUFFERERS
(AND HOW PUBLIC SPIRITED ORGANIZATIONS CAN ASSIST THEM)*

by

A. C. K. Antrobus**

Before one speaks on the subject of childhood malnutrition, it is important that we are all sure that we understand the real nature of the condition.

Malnutrition does not take one clear-cut form. It may be a steadily progressive or even chronic condition as well as a relatively acute, rapidly fatal disease; and, broadly speaking it may follow one of two paths - that which leads to nutritional marasmus, and that which ends in kwashiorkor. Of course it is also possible for a while to straddle the dividing line and present a picture that displays features of both pathways.

There is a tendency, when speaking of malnutrition, for many people to think only of the severest forms of the disease such as may be seen in the children's wards of any hospital. This makes for an extremely limited view of the total problem. As a matter of fact, such cases represent less than ten percent of the malnourished young child population, because any proper accounting must take due cognisance of both the moderate and the severe cases.

It is estimated that approximately 100 million in the world are suffering from malnutrition - ten million severe and ninety million moderate. In Latin America, including the Caribbean, the estimates are three-quarter million

**Based on the text of the address given to the Morant Bay Chapter of the Jamaica Jaycees and as part of their 'Protein for People' Project.*

***Dr. Antrobus is a staff member of the Caribbean Food and Nutrition Institute, Jamaica Centre.*

and nine million respectively. Estimated conservatively, the Jamaican scene should yield no less than 20,000 malnourished under-5's, with about 2,500 in the severe category. To translate this into approximate round figures, at the local district or parish level, about ten percent of children under-5 are malnourished, and ten percent of these are expected to be severe, that is, frank cases of marasmus or kwashiorkor.

"What happens to these children?" one might ask. Out of an under-5 population of some 300,000, 3,000 died in 1971 (the vast majority under-1 year). Of these 3,000 (2,816 to be exact) 345 are listed as deaths from malnutrition and 578 from diarrhoeal diseases - combined figures being 923 of this nation's Infant and pre-school population! Two other statistical tidbits based on these figures are worth recalling - one-fifth of *all* deaths in Jamaica occur in children under-5; and, malnutrition and diarrhoeal diseases account for one-third of all deaths in children under-5.

Perhaps even more important than the deaths - wasteful and preventable, but nonetheless absolute and final, is the fate of the survivors of severe malnutrition, and of those in the moderate and chronic categories, and the many implications for the individual, the family and the state.

But, at this stage, it seems more logical to examine some of the salient contributory factors that make malnutrition the single leading problem the nation must face. After all, if one takes an in depth look at the causal factors and then devises matching solutions, it will be seen that these are not dissimilar to those which apply to the crime situation. And, in the long term, at any rate, the solutions for the one will have similar foundations to the solutions for the other.

Poverty is undoubtedly at the core of the malnutrition problem. But poverty does not by itself create malnutrition; the companions it chooses are

sick, sinister and depressing. They are:

- poor or inadequate education which is often found in conjunction with considerable ignorance;
- large uncontrolled family size;
- appalling housing and environmental sanitation;
- some cultural-religious influences which act as deterrents to healthy, progressive thinking, e.g. outrageous superstition and bland fatalism;

Additional aggravating factors are:

- an underuse or improper use of the various public services, e.g. health and social services, schools and training facilities;
- a greater tendency to infection in undernourished children, setting up a vicious circle of worsening malnutrition and disease alternately overtaking each other.

Underlying all these factors one may find among the adult kin of the malnourished child either a feeling of neglect by an indifferent society on the one hand, or an attitude of churlishness that is so aptly expressed in "the world owes us a living".

Clearly then, malnutrition is *not* a health problem - neither exclusively nor even primarily. It is, at one and the same time an economic, educational, social, behavioural, demographic, medical, and even historical problem. In the syndrome of malnutrition are concentrated all the symptoms and signs that arise from a mish-mash of inadequacies that have their most serious effect on that most vulnerable section of the population - the very young, particularly those under three years of age - those who may be rightly called *The Real Sufferers*.

Whatever these inadequacies are identified to be - whether in the form of irrelevant social legislation, inappropriate health care, anachronistic education systems, or other weaknesses in economic policies or agricultural

production patterns, the existence of the problem of malnutrition, involving as it does the lives and the future of so many citizens (albeit young and inarticulate ones) is telling us something out loud; it is telling us that we have managed somewhere along the way to have confused our priorities.

In the same way that malnutrition must not be regarded as a health problem alone, it should not be seen as a strictly government problem. Granted, governments are not blameless in this regard; equally, they must not be branded scapegoats, however convenient it might be to do so. Not only must the people of the country bear their portion of the blame, they must also seize the opportunity for corrective action; the war on malnutrition is a long one. Many battles have been fought against it - some won, some lost, and some are still in apparently ceaseless combat. Today, however, with the adverse shifts in food availability and balance of payments and the seemingly unstoppable spiral of inflation, the poor and the undernourished face increasingly graver threats to their survival.

The Jaycees' imaginative intervention in this "chronic childhood crisis" is epitomised in the slogan "Protein for the people". By definition slogans must be catchy, sonorous and succinct, and reasonably accurate. This one possesses all these qualities. It must, nevertheless be stressed that, in the drive to supply protein, the importance of energy (calories) should not be overlooked or suppressed in any way. Remember, malnutrition is the result of an insufficiency of both calories and protein. Let us not, therefore, too hastily equate "Protein for the people" with meat, fish and dairy products which, as we all know, are to be found on the highest priced shelves of the supermarkets and, in the process, underplay the nutritional roles of the cereals (rice, bread corn), starchy roots (yam, coco, potato), and legumes (peas and beans). For the average Jamaican, cereals alone provide one-third or more of

his needs for calories and for proteins - much more than meat, fish and eggs combined. By all means "*Plug the Proteins*" but, especially when we are thinking of the children, don't forget also to "Charge up with Calories!"

In looking at approaches to solutions to this problem of childhood malnutrition there are those measures which traditionally and, quite rightly, fall within the province of government activity, e.g. clinics, health staff, agricultural policy, price control, and there are those measures which require that the action be taken by the individuals directly responsible for child and family - the actual preparation of feeds, hygienic practices, growing food, attending school and clinic. Somewhere in between comes the public-spirited sector of the community such as the service organisations which carry a big responsibility charged with potential to influence the society at a number of different levels. By agitation and persuasion, by cajoling and compromising, but especially by advocacy and action, they are capable of demonstrating the strength and the power for good that belong in unique measure to such bodies.

Their principal resources are manpower backed up by fund raising expertise. Consequently the range of activities in the public interest is almost limitless, finding expression in leadership, organisation, training, sponsorship, and perhaps staff employment and provision of physical facilities and supplies.

Nutrition, as understood in the context of the slogan, lends itself to community development activities which are well in line with these organisations' philosophy of helping in the community. So the very last thing that should be done is to dole out food freely and think it has solved the problem; this has its place only as an emergency relief measure.

In the circumstances, it might be worthwhile drawing attention to a few caveats for organisations wishing to intervene in the area of community nutrition:

- Clarify in your own minds what is your purpose in intervening. In this case it probably is the improvement of the nutritional status of the young children.
- Ensure that your perception of the problem is in harmony with that of the residents within the community.
- Create the appropriate level of awareness of the existing problem among the people using facts or concrete examples to reinforce the points you make; better still, if some of this comes from the people themselves.
- In setting up a planning or working committee it is mandatory that the community is well represented. This means full cross-sectional representation whenever possible.
- By the very nature of this type of project a local field worker/coordinator will be needed. This may be full-time or part-time, paid or voluntary, depending on a number of circumstances. Choose wisely!
- Have due regard for existing social, religious or other such organisations made up of residents, as well as for other services and personnel functioning in the area. Where possible graft onto these, and work with or through them. It pays off to the benefit of all.
- Promote the idea of volunteer services within the community by its own members. This may take the form of home visiting, extracurricular teaching or some other service that demands no more than probably an hour or two a week.
- Provide for regular meetings that bring together all the people involved in the project.
- Make record keeping and data collection - however elementary - a fundamental part of any project. It can be invaluable both in the current project and in the future if used for evaluation.

- Make allowances for fluctuating interest both on the part of the organisers and the community. In other words ensure that you give adequate thought to the question of motivation, incentive and staying-power.
- Do not build-up to let down. Plan to stay long enough to achieve some worthwhile goals; and aim at leaving behind something that can be largely self-sustaining. Abrupt withdrawal of a social intervention programme is often immoral and traumatic.
- Help in the education of the public by creating awareness of this problem through appropriate methods of publicity. The imaginative use of the media - from billboard to TV, should make a very worthwhile contribution in the fight against malnutrition.

These principles, although probably well-known, have been repeated because they are so absolutely essential for the success of a community-oriented project; and they are of particular relevance in a primarily educational project directed at changing the food behaviour of people and of children in particular. The actual approach may be at the mass, small group or individual household level, in any combination or singly: Each has its particular merits; and a small community allows some flexibility in choice of approaches.

One might consider making use of a cadre of volunteer assistants (referred to earlier) to work along with the local leader. These are more likely to be women (not that men are unacceptable); they may be young school-leavers or mature matrons as long as they possess that spark of willingness to learn and to serve. They can become the corps of grass-roots educators providing the now absent outreach into homes where neglect, poverty and ignorance create the ambience in which malnutrition rears its truly ugly head.

The education role of such service organisations may be furthered and made more effective by helping to provide appropriate educational material in the form of posters, pamphlets, films and other audiovisual aids to be used by

the educators. In addition they can provide the material and equipment necessary for practical demonstrations in food cultivation, preparation and storage - all important elements in the execution of a better nutrition programme, and at relatively modest cost.

The promotion of home food production is much talked about. But let us remember that this requires land, planting material, tools and the will to put them together. Assisting in achieving this end through each of these requirements must surely provide yet another important challenge.

Then there is the further task of seeking out and coordinating the human resources and the expertise needed for purposes of consultation or training as required. This may even include efforts to develop nutrition education activities within the community school; or to facilitate short-term training outside of the district in subjects like farming techniques and youth leadership.

It is of some importance too, that every wholesome influence should be exerted to encourage staff stability within the services that exist in the district, and strive for the filling of vacancies in those services which can mean so much to the small community.

This may not be the most glamorous area of service; it may lack the drama of a fund for a hole-in-the-heart operation on one luckless child, but, at the same cost, the achievement in terms of the numbers and quality of life, is far greater and eminently more satisfying because the help will have gone to those members of our society who deserve better than to bear the stigma of that hideous label - *The Real Sufferers*.

NUTRITION NEWS AND OPINION FROM THE CARIBBEAN

GASTROENTERITIS AND MALNUTRITION IN CHILDREN UNDER TWO YEARS
OF AGE - RESOLUTION NO. 4 OF THE SIXTH CARIBBEAN HEALTH
MINISTERS' CONFERENCE (1974).

THE CONFERENCE,

Having studied the "Strategy and Plan of Action to Combat Gastroenteritis and Malnutrition in Children under Two Years of Age";

Aware that the problem of gastroenteritis and malnutrition among children under two years remains one of the principal causes of preventable ill-health and loss of life among children under two years;

Conscious of the fact that in the last eighteen months steep rises in the price of basic foodstuffs and problems of availability have made it all the more necessary to take vigorous measures to protect the health of the most vulnerable of all members of our society;

Noting that the Plan of Action transcends the Health Sector,

1. ACCEPTS this document as the collective strategy and plan of action to combat these problems;
2. URGES each individual government to accord to the implementation of this plan by 1980 a high degree of priority, and to allocate to the best of its ability the necessary resources;
3. REQUESTS the Pan American Health Organization, UNICEF and the Caribbean Food and Nutrition Institute to make the implementation of this strategy one of the main focal points of their assistance to the governments, during the rest of the decade;
4. CALLS UPON these Organisations and the Faculty of Medicine of UWI to consult with the Executive Secretary and with each other and to draw up and undertake a planned programme of assistance to the governments in implementing the strategy from henceforth until 1980;
5. REQUESTS the Secretary-General of the Caribbean Community Secretariat to coordinate and actively assist the efforts of the Governments and of the organisations mentioned, making whatever additions to the staff of the Secretariat that may be needed to give effect to this Resolution and seeking external aid as necessary;
6. REQUESTS PAHO/WHO and CFNI to assist the Executive Secretary to report progress in respect of this strategy in 1976, 1978 and 1980.

EDITOR'S NOTE: "The Strategy and Plan of Action to Combat Gastroenteritis and Malnutrition in Children Under Two Years of Age" will be published in the next issue of 'Cajanus'.

**MATERNAL AND CHILD HEALTH SERVICES - RESOLUTION NO. 5 OF
THE SIXTH CARIBBEAN HEALTH MINISTERS' CONFERENCE (1974)**

THE CONFERENCE,

Having studied the Report of the Chief Medical Officers;

Taking into account the fact that mothers and children comprise sixty-five percent of the total population and are the most vulnerable to health hazards;

Concerned that maternal mortality and morbidity rates in Member Countries are five to seven times higher than in more developed countries and could be reduced by forty percent to fifty percent through adequate preventive services;

Knowing that Member Countries attach great importance to health services for mothers and children and have begun to develop the necessary programmes;

Believing that an increase in resources is required to strengthen these programmes;

Considering that while each country must define its own problems and targets, there are certain common needs that should be met by concerted action in order to make the most effective use of resources and to reinforce the efforts of individual countries;

1. REQUESTS the Executive Secretary,

- (1) to seek the cooperation of the University of the West Indies, PAHO/WHO, UNICEF, CFNI and UNFPA in preparing a strategy and plan of action to strengthen the maternal and child health services,
- (2) to coordinate these efforts and report on progress to the Seventh Caribbean Health Ministers' Conference.

THE JAMAICA FOOD TECHNOLOGY INSTITUTE

By Percival Chen. The Daily Gleaner (Jamaica) 27 June 1974.*

In 1954 a Processed Foods Division was established in the Ministry of Trade and Industry and consisted of a Food Technology Section and a Standards Section. The Standards Section was involved primarily in regulatory functions such as factory inspection and product standardization. The Food Technology Section was involved in new product development and providing technical assistance to local processors.

*Dr. Chen is head of the Food Technology Institute.

In 1970 the Standards Section moved out to form the nucleus of the new Bureau of Standards and the Food Technology Section joined with the Jamaica Industrial Development Corporation where it now operates as a department of the Productivity Centre.

Our main aims and objectives are:

- (a) to stimulate, facilitate and undertake the development of food processing industries on the island;
- (b) the research and development of new food products utilising local raw materials;
- (c) the provision of technical service to local processors;
- (d) to improve the standard of technology in the industry through training.

The Institute operates three technical sections:

1. *Experimental Kitchens*: There are two kitchens staffed by qualified Home Economists and Home Economist Assistants. Their responsibilities include product and recipe development, sensory evaluation of products.
2. *Chemical Research Laboratory*: This section is staffed by qualified Chemists and Laboratory Technicians. Their responsibilities include the setting up of quality control criteria and procedures for each product, new product development, food analyses and providing technical assistance to processors.
3. *Pilot Plant*: This section is staffed by Food Scientists and the work involves process development, adaptation of new products for simulated commercial production and limited test marketing of new products. Provision has also been made for the addition of a Chemical Engineer to our staff to undertake process development work, prototype equipment designing and the setting up of small food processing operations.

Our present staff comprises nine university and college graduates, two at the Doctorate level, one at the M.Sc. level, two with Bachelor degrees and four with Diplomas. This year we intend to add a Chemical Engineer and another Food Scientist.

Expensive

Scientific and technological research and development as most people know is an expensive and often times frustrating undertaking. Too often industrialists in developing countries are content with direct transfer of technology from developed countries without making that extra effort to develop their own technology. The transference of technology from developed countries is very valuable and indeed necessary but sometimes not directly relevant, requiring some modification to suit our own conditions.

Very often I hear the standard reply from our processors that they are too small to get involved in research and development and cannot afford it, without thinking of the possible growth that could result from such an investment in terms of increased sales and increased profits either by additional products or improved processes and products.

With increased consumer awareness about standards of quality, value for money, packaging, labelling nutritional value, etc. and more stringent Government regulations, both local and foreign, and increasing competition from other CARIFTA and Central American countries, the food processing industry cannot afford to be left behind in the technology race. Processors will find that in order to be competitive their success will depend to a large extent on their efficiency, the quality of their products and a willingness to change and adopt to new consumer tastes and demands.

A product that has been traditionally processed in the same way for the past ten or twenty years may well find itself losing ground to newer and more sophisticated products. Processors can no longer ignore factors such as quality control, efficiency of production, less than optimum use of production capacity, changes in packaging, new additives, new food regulations, new labelling laws, new and improved technology, use of properly trained personnel, etc.

This is the void that we wish to fill. Jamaican processors are fortunate that the Government has had the foresight to establish such an institution to help them and I implore you to grasp the opportunity that is there for the taking.

We lay no claim to being experts in all fields of processing and will admit that many of the processors are probably more knowledgeable, through years of experience and involvement with production problems than we are, but I feel we can still contribute in terms of updating your information on new technology, in conducting small scale experiments which though you may be quite capable of conducting yourselves are not equipped to do or cannot spare time or personnel to do, and to provide formal training courses to meet your needs.

I believe, too, that we can be of even more assistance to the small processors or young entrepreneurs who are trying to get started but lack the necessary technical know-how.

Franchising

As regards the new policy of franchising of products the new Food Advisory Committee under the chairmanship of Mr. Leo Love is currently examining the mechanism of implementing this policy and the processors will be informed as soon as this study is completed. Some of you may well be asked to assist and guide us in our deliberations and I hope that we can count on your full support.

The nominal charges that will be made should not be a deterrent to your requesting assistance but should be considered as a worthwhile investment in developing your products in particular and the industry in general. The returns from these services will assist us in purchasing the necessary equipment to

conduct research, to provide more specialized training for our staff, to sponsor more training courses for your staff and to defray some of the expenses involved in the development of new products in order to expand the number of projects.

One of the main benefits we expect to gain from this Press Conference and this new thrust is a closer liaison with processors. I feel we have a lot to learn from you especially in relation to the types of problems that occur in the industry and to be guided by you in the choice of projects as you are more in contact with the needs and demands of the ever critical consuming public and the marketing situation. This co-operation I feel can assist us in making our contribution more meaningful.

As a follow-up of this new thrust my senior staff and I would like to visit each and every processor to discuss with you the areas in which we may be of assistance. Government has already announced that agriculture and agro-industry are priorities in the national development plans.

One of the primary problems facing the industry is the availability and reliability of local raw materials. The Government has taken a major step forward in this direction by establishing a massive food production drive in projects such as the land lease, food farms and self-help programmes. In anticipation of the success of these programmes the industry must gear itself for the vital role it has to play in the utilization of these crops.

We have to establish a close liaison with the planners of these projects to make them aware of our needs and be prepared for them as many of these crops may require additional processing facilities, new types of products and new methods of processing.

Our aim is to see the processed foods industry develop and my colleagues and I at the Food Technology Institute and the supporting departments of the Jamaica Industrial Development Corporation stand ready to assist you to the best of our ability.

SEMINAR ON A FOOD AND NUTRITION POLICY FOR JAMAICA

During 1973 the Government of Jamaica recognized the significance of good nutrition in the general well-being of the people by establishing a Nutrition Advisory Council. In setting up the Council, Cabinet charged it, as its first priority, with developing a National Food and Nutrition Policy for Jamaica and programmes to implement such a Policy.

To accomplish this, the Council with the support of the Caribbean Food and Nutrition Institute planned a comprehensive five-day Seminar for the presentation of information on the existing situation and for receiving suggestions for future action aimed at eliminating malnutrition in vulnerable groups and at developing a strategy to ensure that food supplies will be sufficient to meet future nutritional needs.

The purposes of the Seminar were as follows:

1. To review and assess the nutritional status of Jamaicans and to define the vulnerable groups.
2. To review and assess present and projected food supply and demand and to define future food needs for all segments of the population.
3. To define the objectives of a Food and Nutrition Policy for Jamaica.
4. To provide a forum for discussion and evaluation of the alternatives for meeting these objectives.
5. To set out recommendations for action as a guide to ministries to achieve the objectives and as a basis for drafting a Food and Nutrition Policy for Jamaica.

The Seminar took place at the end of May. Background information relating to human nutrition in Jamaica was presented. Six working groups, each dealing with one aspect of nutrition policy, studied the subject in depth and came up with detailed projections and recommendations for targets, programmes and projects.

At the end of the meeting the information provided at the Seminar and the proposals and recommendations made, were compiled into a draft food and nutrition policy for Jamaica. This document, after modification where necessary and after the budgetary implications have been worked out, will be submitted by the National Nutrition Council to the Cabinet.

The policy was conceived at the Seminar and it will be born when Cabinet approves the final version. Its growth and development will depend upon careful and loving nurture.

CAJANAQUOTE

Conservative estimates by the United States of America Food and Drug Administration indicate that between a half and two billion dollars are spent annually in the United States of America alone on non-prescribed food supplements and vitamin and mineral products.

*C. Witschi and J. Stare
In 'Food Fads' written for World Health
Day, 1974.*

*(Editor's note: A billion means, in the
USA, one thousand million).*

NEWSPAPER CLIPPINGS

NUTRITION DRIVE MUST BE SUSTAINED

From the Barbados Advocate-News (editorial) 4 April 1974.

The Government is making positive efforts, both preventative and curative, to attack malnutrition in Barbados. This assurance was made by the Minister of Health, Dr. Rameses Caddle, at the opening ceremony of an Applied Nutrition Training Course currently in progress.

Supplying figures to demonstrate progress already made, the Minister pointed out that in Barbados, the death rate of seven per thousand among malnourished discharged from hospital and followed up at home over the past six years is much lower than that of published figures for other developing territories.

Malnutrition has ill-effects on infant development, on the working efficiency of adults and consequently on the productivity of the country, so that any programme which attacks this debilitating illness is of the utmost importance.

The idea of malnutrition which first springs to mind is that of not having enough to eat and the present world food shortage and the news of starvation with ensuing death to hundreds of thousands in India and Africa are the most dramatic instances available.

But malnutrition is far more than this, since health is also much more than being alive. It is an alarming fact that a vast number of people have enough to eat but still suffer malnutrition. They eat in quantity but the quality and balance of their diet is not sufficient to provide the total needs of their bodily health. As a natural corollary, mental health and intellectual capacity also depend largely on proper nutrition and physical health.

Proper Diet

This is why the Minister emphasised that his Ministry in its attack on malnutrition in Barbados aimed to:

- Improve standards of nutrition;
- Obtain the optimum reduction in the incidence of maternal and infant mortality;
- Increase community participation in the betterment of their health;
- Obtain optimum reduction in the incidence of those diseases for which specific preventive techniques are available; and
- Integrate the dispensation of preventive and curative health and to improve institutional and non-institutional care.

The Minister chose diplomatic language when he said that it has been established that there is a positive correlation between high infant mortality and nutritional deficiencies. Put bluntly, this means that children who are not well fed die.

Another awful consideration is that many ill-fed children do not die, but will exist without ever being healthy or able to realise their full potential.

It was also pointed out that the burden of malnutrition falls on the poor who spend a greater proportion of their budget on food. So increases in food prices in relation to income can be expected, at that marginal level of nutrition, to increase disease and death.

One can promise oneself clothing, shelter, education, and a hundred and one other things that enhance the quality of life; but to survive one must eat and the cost of food in relation to one's income determines whether one survives or really lives a healthy life.

Conditions in Barbados' agriculture, trade, education and finance operate to ensure or deny proper nutrition. We import vast quantities of the foods we consume and thereby feel the effects of inflation in the countries which supply us. This may result in the cost of basic foodstuffs exerting unbearable strains on family budget.

Social Services

Financing the administrative and social services puts further burdens on already slender resources thus reducing the amount available to spend on foods. Lack of knowledge about diet can result in what little money is available for food being spent on items which are not of prime nutritional value.

Increased agricultural production and diversification can reduce trading imbalance as well as provide more healthful ingredients for our meals.

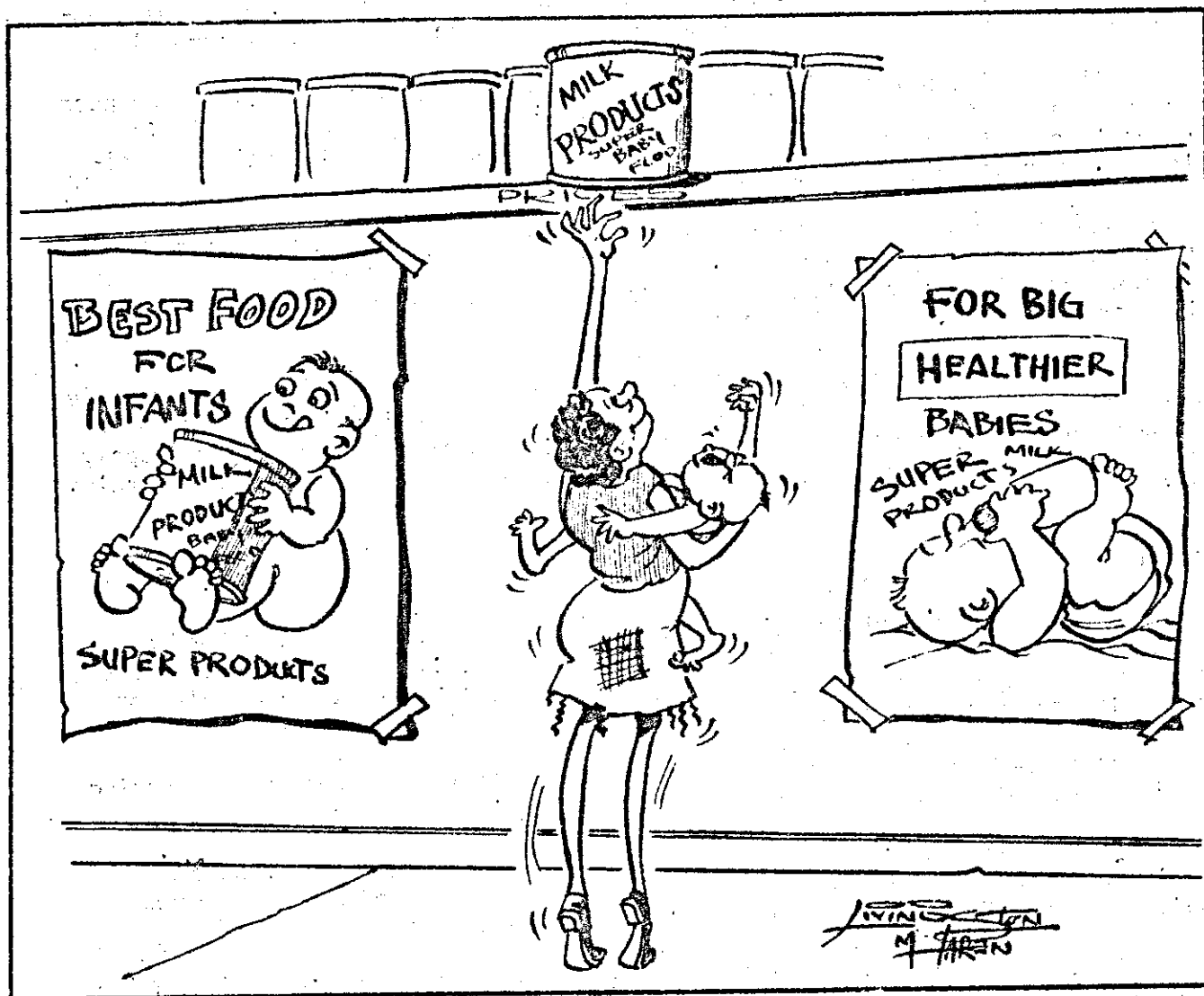
Family planning is also of prime importance in the scheme of adequate nutrition for our nation. Put simply, if there are fewer mouths to feed the available cash will go further in feeding our people better.

Already the Applied Nutrition Programme has reduced the incidence of malnutrition in our island. A campaign to show us how we can feed ourselves better from our own resources has been continuing for some time. Much emphasis has been placed on the use of cheap ingredients to cook delicious foods full of nourishment.

But it is a sobering thought that when the incentive of cheapness is employed it is only on a comparative basis. For instance, peas, beans and fish recommended as cheap sources of protein, can only be considered cheap when compared to more expensive beef and other meats.

From the foregoing it is obvious that there is no easy way to solve the problems of malnutrition, but its effects on present and future generations can be too grave for us ever to let up in our fight to achieve better health through better eating.

CARTOON
From the Jamaica Daily News, 6 June 1974



POSITIVE STEP FOR FISHING INDUSTRY

From the Barbados Advocate-News (editorial) 8 April 1974.

It has been hinted that the World Bank is actively considering the possibility of processing a loan to the Barbados Government for the purchasing of deep sea trawlers. The hint came from Mr. Anderson Morrison, Barbados' Minister of Agriculture, Science and Technology, who hastened to point out that if the project did go through, Government involvement in trawl-fishing was in no way intended to put the country's local fishermen out of business. But he felt it was necessary that we should get all the fish we can from the waters around the country since fish was still one of the cheapest forms of protein.

Our involvement in extensive trawl-fishing can be said to be long overdue. Ever since the United Nations Development Programme/Food and Agriculture Organisation (UNDP/FAO) fisheries project, which at one time had Barbados as its base of operations, proved the feasibility of deep-sea fishing in the area, nothing has been done.

The UNDP/FAO project officials came out strongly in favour of the Eastern Caribbean Islands doing more to get the fish which is known to be there.

Our fishing industry at present is based on the operation of small motor-equipped boats making overnight trips to the fishing banks and returning to make their sales in an operation carried out all within a twenty-four hour period.

Deep-sea trawling would involve a longer stay at sea by the crew and with the facilities provided for cold storage aboard the trawlers can carry out more extensive fishing at any one time.

The Japanese have shown the potential of trawl-fishing, and their trawlers have been known to sail into this area in search of fish. If the Japanese can come from so many thousands of miles away to trawl in our waters, it is certainly time that we got into the act.

Although fish is less expensive than meat many Barbadians are still not able to get it in the quantities they desire.

The Barbados Marketing Corporation has helped from time-to-time by sending trucks into the rural areas to make sales, but by and large sales of fish in Barbados are carried out mainly in the City and suburban areas, with a few fishing villages around the Island providing the commodity to those immediately within reach.

It means, therefore, that apart from getting bigger catches of fish the marketing aspect would also have to be considered if the country is to be fully provided with the commodity.

However, what is of immediate importance is that the project gets the nod from the World Bank, and we get those trawlers out to sea.

In anticipation of this a number of Barbadians are already being selected for training at the Caribbean Fisheries Institute which is to be established in Trinidad.

It is understood that the Institute will provide training for crewmen, maintenance mechanics, rigmen and captains.

Apart from the practical aspects involved in trawl-fishing in the area, the project, because of the potential it holds, could make a lot of difference in our efforts to provide adequate nutrition for our people.

It is encouraging to know that the necessary steps have been taken to put fishing in the area on a more solid footing. At one stage it seemed that after the UNDP/FAO fisheries project had been completed that we were just prepared to treat it in an academic manner, not bestirring ourselves to benefit from what it had shown to be feasible. Now all that is changed as we prepare to get down to business.

JAMAICAN'S NEW ATTENTION TO NUTRITION WELCOME.

By. Joy Scot. From The Jamaica Daily News, 1 July 1974.

Jamaicans are becoming more nutrition conscious. This is a welcome sign which should not be overlooked because for too long there have been malnourished people in our midst.

The business of nutrition is one that has the interest of the entire Caribbean. And the Caribbean Association of Nutritionists and Dieticians was formed to look at problems of nutrition and possible solutions.

At their second annual meeting last week, the theme was "Approaches to Community Health", and many worthwhile topics were discussed, among them "The role of the Home Economist", and "Dietary Standards for the Caribbean".

The point was made at the seminar that much of the malnutrition evident was caused from poverty. This cannot be disputed.

It is pathetic to see boys of ten to twelve years scrounging around city restaurants to get scraps of food from the plates of customers, and eating as greedily as if they had not put a morsel to their mouths for days.

The schools' feeding programme is helping to combat this, and there are also health clinics that give advice on diet.

A nutrition campaign was launched in Jamaica recently: "Better Food for a Healthier Jamaica". The campaign involved some successful displays and demonstrations all over the island. These campaigns and demonstrations aimed at showing people how to make more nutritious meals and use home-grown and local foods.

In these days of rising food costs one may often be tempted to skip meals or eat inferior foods to avoid an escalating food bill.

This can be avoided, however, by eating smaller quantities of good quality food. The one-pot meals being promoted are very economical and practical, and can at the same time be quite nutritious.

The Bureau of Health Education has been making tangible contributions to the nutrition campaign by providing helpful reading material and menus.

Recently Health Minister Ken McNeill said that "education is wasted when children are underfed." This has been proven true in a study carried out by the Bureau.

From this survey it was discovered that the children who were given balanced nutritious meals over a period in comparison to the meals of inferior nutritional value which they were accustomed to having, were greatly improved. They were more alert in class, showed less signs of fatigue, put on more weight, and, in some cases, the skin tone was vastly improved.

Like all other campaigns, projects such as Better Food for a Healthier St. Catherine, Clarendon, Trelawny and so on, should not be just for a week or so, but should be a continuous effort to wipe out malnutrition.

Widespread breast-feeding campaign is to be started soon and this should be useful and prove informative to many mothers who think it is *infra dig* or bothersome to breast-feed. As a pamphlet from the Bureau of Health Education said, breast-feeding is more convenient and above all less expensive and better for the baby.

At the first annual general meeting of the Caribbean Association of Nutritionists and Dieticians, one of the resolutions called for the establishment of a faculty of Nutrition at the University of the West Indies.

One year has passed, and so far nothing has been said about it. Talking and resolutions will not help because everyone will think his project a priority. It is for the executive of CANDI to make positive agitation for their request to be heard and given favourable consideration and action.

If a nutrition programme is to be successful there must be trained nutritionists and dieticians to help, and we are in short supply of both.

The nutritionist has an important role to play in the education of the public. The nutritionist has to decide where in the society the deficiency in diet is occurring and how to go about correcting this.

Nutritionists have to impress on Government, and the powers that be, the importance of their role in the nutrition programme and the necessity of having trained personnel to carry it out successfully.

It is hoped that there will be news of a Nutrition Faculty or Nutrition courses being offered at the University of the West Indies soon.

The Consumers' League has been accused of being "a group of political sympathisers who conduct their meetings over the telephone, receive \$7,500 hush money from the Government and are controlled from Jamaica House."

Whether this accusation is justified or not, the Mobile Kitchens which they recently launched are meaningful attempts to help the nutrition problem.

These Kitchens will prepare simple foods and show how to prepare these meals. One of the good things is that they will be going to parishes outside Kingston.

The Kitchens represent a solid move in the right direction and the people behind this move are deserving of congratulations.

It would not hurt Jamaica to have healthier men and women who can think better and be more productive at work.

CAJANAQUOTE

If no concerted action is taken, the time will soon come when the female breast will lose its function of feeding the young and become only a sex symbol. To avert this catastrophe governments all over the world, but especially in developing countries, and medical and paramedical personnel must ensure that the people are given every opportunity to know the facts. Facilities must be provided in offices, shops, industries, and all institutions where women work for children to be breast-fed, or time off given for breast-feeding to all mothers with babies. Baby food manufacturers must be made to reduce the tone and level of their advertisements so that women are not encouraged to give up breast-feeding for the imagined advantages of bottle-feeding. The medical profession - especially in developing countries - must know more about child nutrition and the importance of breast-feeding, so that they, the nurses and other health staff may set good examples and teach mothers that the ideal in infant feeding is breast milk.

Dr. Adewale Omololu
Professor of Nutrition
University of Ibadan, Nigeria

In 'The importance of breast-feeding'
(written for World Health Day, 1974).

CFNI NEWS

KENNETH LESLIE

We are happy to welcome Ken Leslie to the staff of the Caribbean Food and Nutrition Institute, as an agricultural economist. Previously Mr. Leslie was a lecturer at the University of the West Indies, St. Augustine, Trinidad.

In 1969-1971 he was a Ford Foundation Fellow at the Food Research Institute at Stanford University, USA. In 1972 and 1973 he had a FAO fellowship to study at the schools of Nutrition of Cornell University, USA and Ibadan University, Nigeria. He has worked extensively in the Caribbean region.

NUTRITION MADE SIMPLE

CAN THE BRAIN CATCH UP AFTER CHILDHOOD MALNUTRITION*

By Jack Tizard**

It has long been known that differences in nutrition during childhood have lasting effects on physical growth. Improvements in diet during the last one hundred years have brought about a marked increase in stature, even in industrial societies, and the average height of European males has increased by about 2.5cm per generation (twenty-five years) during this period. However, social class differences in diet still remain, and the children of poor parents are on average shorter than children of rich ones. These differences persist into adult life.

In many pre-industrial countries the great majority of the population are ill-fed and in consequence short in stature. In many of these countries growth rates are relatively normal up to birth and during the first six months of post-natal life, but they become depressed after six months and increasingly so during the second and third year of life. After that there may be a return to the normal growth rate, but the early losses are not made good, so that the children are ultimately shorter as adults.

Under-nutrition has of course other immediate and serious consequences in that it increases susceptibility to infection by lowering the body's resistance to disease. Ill-fed animals (including humans) have higher sickness and death rates at all ages, but particularly during childhood; and the effects of under-nutrition upon well-being, as on health, are profound.

The Brain Growth Spurt

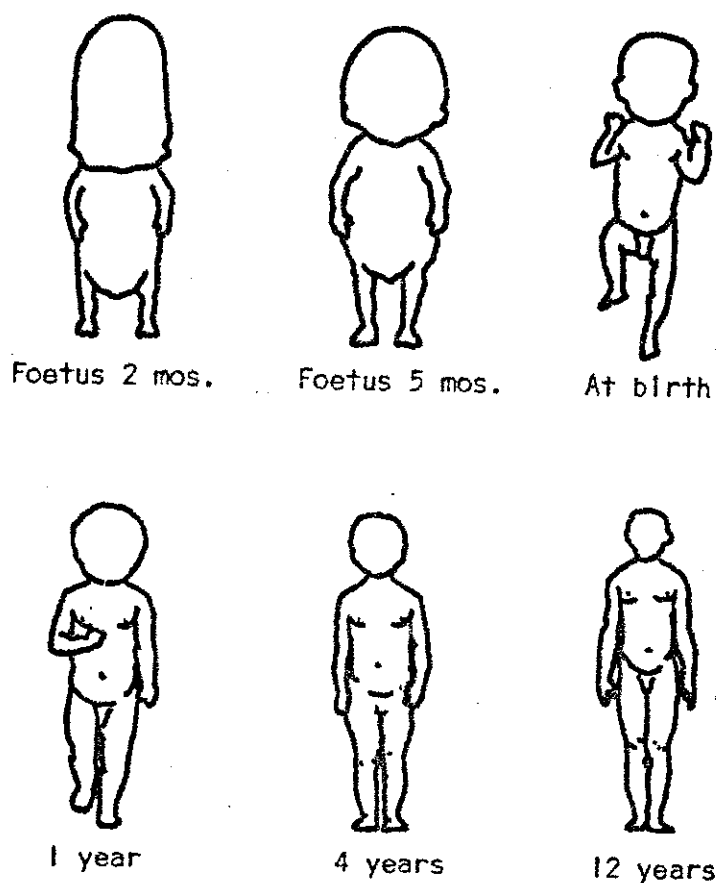
The brain, like the rest of the body, requires food in order to grow, and in recent years scientists have become increasingly concerned about the possible long-term consequences of malnutrition for brain growth and for the development of higher nervous and mental processes which are functions of the brain. We know from animal studies in the laboratory and from autopsies on children who have died through accidents quite a lot about brain growth; but the relation between brain growth and psychological development is much less well understood.

Let's first consider brain growth. In all animal species including man this occurs early in life, is very rapid, and is virtually complete by the end of early childhood. In man the "brain growth spurt", as it is called, starts during the last three months of pre-natal life and continues throughout the first eighteen to twenty-four months of post-natal life. At birth the

*This article is reprinted from "World Health" February-March 1974.

**Professor Tizard is from the Thomas Coram Research Unit of the University of London Institute of Education. Professor Tizard has visited and worked in Jamaica frequently.

THE RELATIVE SIZES OF HEAD AND BODY DURING GROWTH*



*These diagrams show the relative sizes of human head and body at certain ages. The brain develops earlier than the rest of the body, reaching about twenty-five percent of its mature weight at birth and fifty percent six months later. The body, on the other hand, has attained only five percent of its young adult weight at birth, and fifty percent only by the tenth year. Malnutrition during the critical "brain growth spurt" (which lasts from the seventh foetal month until the age of eighteen to twenty-four months) could have serious effects, and scientists are investigating its possible long-term consequences on brain growth and function. (Drawings taken from *Le Livre de la Santé*, Editions Rencontre, Lausanne).

brain is already about twenty-five percent, and by six months nearly fifty percent of its mature weight. The whole body, by contrast, is at birth only about five percent of its young adult weight, and it is not until a child is ten years of age that it attains fifty percent of its young adult weight.

The timing of the brain growth spurt is determined genetically, and if it doesn't take place during a certain critical period (which varies in different species) no "catch-up" in growth is possible later. Since the brain is the organ of the mind, this early critical period of brain growth spurt is significant for the whole of a child's future.

So far as is known, the brain in all animal species is well protected from the most drastic effects of malnutrition, even during the period of the brain growth spurt. Animals starved or ill-fed during infancy may be very stunted indeed as compared with well-fed litter mates; but the brains of well-fed and ill-fed animals will not, on superficial examination, appear to differ strikingly. Closer examination, however, shows that even mild under-nutrition throughout the whole of the period during which the brain growth spurt is occurring does affect the size, weight, structure, cell number and chemical composition of the brain. These effects are not reversible later even if the animal is subsequently placed on a good and well-balanced diet. Instead, they persist throughout life. If, on the other hand, an animal is well fed during the developmental period and ill fed later in life, the effects on the brain are slight, and full recovery is possible.

So much for chronic malnutrition during the period of the brain growth spurt. What happens, however, if there is severe malnutrition, or even mild under-nutrition, during only part of this period? Here the evidence is inconclusive. It seems likely that catch-up is in fact possible, though it may not be quite complete. However, much depends upon the timing, the severity and the duration of the malnutrition, and on the measures taken later to rehabilitate malnourished animals.

Animal species differ greatly in their rates of development and in the timing of the brain growth spurt, so that only very broad generalizations about the development of the brain can be made. There is nonetheless every reason to believe that the human brain is no different from that of other animals in the staging of its development and in its vulnerability to malnutrition, disease or other damage during the period of the brain growth spurt.

Malnutrition and Behaviour

In all species, but especially in man, the brain is an exceedingly complex organ. As far as we know, the brain contains very many more cells than are actually needed by an animal to carry out everyday activities - or even to engage successfully in activities which are highly "intelligent". And within species there is little correlation between, on the one hand, brain weight or cell number, and on the other hand intelligence or behavioural competence, insofar as these can be measured. It is also the case that very large numbers of brain cells can be destroyed with remarkably little effect upon behaviour (though the effects of cell damage depend on the site of the lesion). There is, obviously, some relation between the anatomical and chemical structure of

the brain and its functioning but it is not a simple one; and malnourished animals with brains which are smaller than normal may show only quite minor behavioural deficits, if indeed any at all can be demonstrated.

In man, malnutrition is with few exceptions found only among children of the very poor. It is, therefore, particularly difficult to separate out the specific effects of poor diet from the concomitant effects of the other disadvantages from which the majority of the children of the poor also suffer - grossly inferior living conditions, and unusually high incidence of disease and of debilitating minor illnesses, a family environment which may be intellectually unstimulating or socially and emotionally unsatisfactory in other ways. However, studies being carried out in Latin America, the West Indies, Europe, Africa and India give a broad picture of what happens when young children suffer from chronic under-nutrition, or from severe clinical malnutrition manifesting itself as marasmus (caused by semi-starvation) or kwashiorkor (broadly speaking, a consequence of gross protein-calorie deficiency). A brief account of four representative studies will serve to summarize the way in which malnutrition interacts with other adverse environmental conditions to retard growth and development.

One of the most thorough and best known studies is that being carried out by Professor Joaquín Cravioto and his colleagues in the Scientific Research Division of the Hospital del Niño in Mexico City, who during the last eight years have been engaged in an intensive longitudinal study of all children born in a rural town in south-west Mexico during 1966.

Of 300 children born in this village during 1966, twenty-two developed severe clinical malnutrition before they were five years of age - this despite the fact that the families were offered advice (which they did not take) and medical treatment. Only one of these children became clinically malnourished before his first birthday and only four after the age of three. The remaining seventeen became severely malnourished during the second or third year of life.

Cravioto and his colleagues compared the malnourished children and their families both with the rest of the children born in the village at the same time, and with children who could be matched with the malnourished children from records of gestational age, body length and body size obtained at the time of their birth. They also looked at other factors which differentiated malnourished children from matched controls *prior* to the time when the children became malnourished; and they examined the subsequent development of all the children in the village in order to study relationships between early growth and development and later progress.

They found differences both between the malnourished children and the matched controls, and between the two sets of families. The families did not differ in family structure, economic status, personal cleanliness, literacy or educational level. Nor did the parents differ in height, weight, age or size of families. However they did differ very significantly indeed in characteristics of the micro-environment which affected the children. Cravioto looked at the frequency and stability of the child's contacts with adults; at the amount he was talked to; at the play materials available; and at the range of experiences the child was offered. Even at six months, when only one of the children who later became malnourished was already beginning to falter in

growth, the control families were providing a much better home environment. One-quarter of the homes of the children who later became malnourished scored below the level of any of the homes of children in the control group, and nearly half of them had scores on a "home stimulation" inventory lower than that of all but one of the families in the control group. These differences persisted over time. The study thus showed that factors in the family environment were of profound importance in influencing the course of the children's development even within a social group in which living conditions might appear from the outside to be very homogeneous.

What about the development of the children themselves, before and after severe malnutrition? It was shown that the children who later became malnourished did not differ from other children born at the same time in their early growth and behaviour. However, delays in language development were already becoming strikingly manifest before the malnourished children became ill. And when these children recovered from severe clinical malnutrition they continued to lag behind the control children in language development and in other ways. This developmental delay could not be accounted for merely by the poverty of their material and social environment, but was shown also to be related to their subsequent physical growth.

How complete is recovery from clinical malnutrition? A large-scale study to investigate this was carried out in Jamaica in 1970. The subjects were seventy-four boys aged between six and eleven years who had been admitted to hospital within the first two years of life on account of clinical malnutrition. The boys had all made a clinical recovery and were seen several years later when they were of primary school age. Brothers of the malnourished children within the same age range were also studied, and for each malnourished child the boy attending the same class at school who was nearest in age was also examined. Interviews were conducted with the teachers, and with mothers in their own homes.

Children who had suffered from malnutrition and been discharged from hospital after making a clinical recovery were found to be different from the comparison children on almost all the measures taken. They were on average shorter in stature, lighter in weight, and they had smaller heads. More of them were intellectually and educationally backward. They had fewer friends at school, were more often rated by their teachers as being dull and timid, and by mothers as being docile and unaggressive. Their brothers shared some but not all of these characteristics to a much less marked degree.

Once again a close relationship was found between the children's intellectual development and the type of home they came from. The comparison children who scored above the median on the scale of home stimulation had mean intelligence test scores of seventy-one; those below the median had scores of sixty-one. The formerly malnourished children who scored above the median on the scale of intellectual stimulation had scores of sixty-three; those below the median had scores of only fifty-three. The mean scores of *malnourished* children in homes with *good* intellectual stimulation and *non-malnourished* children in homes with *poor* intellectual stimulation were similar; both of these groups were however on average significantly *duller* than *non-malnourished* children in homes with good intellectual stimulation and significantly *brighter* than *malnourished* children in homes with *poor* intellectual stimulation. These data

are in agreement with Cravioto's; they indicate that both home stimulation *and* good nutrition are important for intellectual growth, and that both continue to exert a powerful influence on development throughout childhood. Relatively good home circumstances help to repair the damage caused by malnutrition in infancy, but, at least within the somewhat narrow limits set by the Jamaican environment studied in this investigation, the effects of malnutrition are still very evident in later childhood.

Of the many studies made of the effects of dietary supplementation on growth and development, one being carried out by Dr. Chavez and colleagues in another Mexican village may be singled out. Chavez obtained detailed data about the development norms of a small group of children in this village, and then, in the same village, provided supplementary feeding first for pregnant women and then for the same mothers and their babies. The results were very dramatic. The supplemented children grew faster and developed more quickly than did a control group. They slept less, spent more time out of their cots, talked and walked at a younger age, and were more vigorous in play and more likely to take the lead in games with their brothers and sisters and age-mates. And because they were precocious, healthy and lively, they became more interesting to their parents and more highly regarded by them. Hence they received much more attention than did other children in the village, and this in turn increased their behavioural competence. In other words, the children themselves brought about changes in the social environment which in turn contributed to their own development.

This study, like the two already mentioned, shows that there are complex interrelationships between a child's material and social environment, his nutrition, and his growth and development. It also points to an additional factor affecting the situation, namely the child himself - an active agent influencing as well as influenced by his environment.

The Dutch Famine

As already mentioned, a restriction in diet which occurs during only part of the period of the brain growth spurt may not have lasting effects if conditions before and after this experience are good. Evidence to support this comes not only from animal studies but from records of survivors of the Dutch famine of 1944-45. This famine was caused by transport restrictions imposed in occupied Holland during the latter months of the war. The famine was severe and lasted six months. Before and after the famine the population was not *seriously* malnourished.

Of the babies born during the famine, virtually all male survivors were examined when they were nineteen, at the time of military induction, and the records were later carefully analyzed by a team from Columbia University, New York, in collaboration with the Dutch authorities.

The results of this inquiry can be stated very shortly: no greater mental or physical retardation at age nineteen could be discerned among the young men born in the famine areas, nor did they differ in intelligence from others born elsewhere in Holland at the same time or conceived after the period of famine. However, before we conclude from this that the famine had no effects, it should be noted first that the birth rate dropped very sharply indeed

during the famine period, and secondly that the mean birth weight of the survivors was not abnormally low - though it was lower than that of other Dutch babies born before and after the famine period. The results of this study confirm that the foetus is highly protected *in utero* and that young children can compensate for early adversity if this does not last too long. But one cannot generalize from this Dutch study to other areas or other populations.

Implications

The brain grows rapidly during infancy and early childhood and is especially vulnerable to malnutrition during that period. Follow-up studies of children hospitalized for severe clinical malnutrition in the first two years of life indicate that the ill-effects of malnutrition persist; their consequences for growth and behavioural development are however greatly influenced by the quality of the environment in which the children grow up.

Animal studies show that chronic under-nourishment during the period of the brain growth spurt also has irreversible effects upon the brain's growth. However there is no simple relation between brain structure and behaviour, and if they grow up in a "stimulating" environment animals malnourished in infancy may not differ noticeably in behaviour and adaptability from well-nourished ones, though they may be more easily affected by, and less adaptable in, novel circumstances. It is not possible to say with any certainty how human beings are affected by such conditions: in developing countries children who are under-nourished also live in an exceedingly poor material environment and usually in a social environment which is also unstimulating.

Taken as a whole, the evidence points to the great importance for brain growth of intra-uterine life and the first two years of childhood. However, the whole period of childhood is significant for development, and both nutrition and education contribute to the growing intelligence of the child.

CAJANAQUOTE

"I am one of those Unskilful Persons that cannot discern a State of Marasmus, when the danger is far off."

Nevile, 1681, *Plato Rediv.* 24
(Quoted in the *Shorter Oxford Dictionary*)

LETTER TO THE EDITOR

From Dr. W. J. Brandey, Medical Officer (Health) Port Maria, St. Mary, Jamaica.

Dear Sir:

"Population Densities"

Many thanks for the copy of 'Cajanus' for April.

I was surprised to read "Nutrition in the Home" by Dr. Williams ['Cajanus', 7, 54-57 (April 1974)] in which she mentions and compares the density of population in Holland and United States of America; it would be more topical to mention the density in Barbados, which is much nearer than Holland, and greatly exceeds Holland.

Yours faithfully

W. J. Brandey

8 July 1974

Editor's Note:

The 1972 Demographic Yearbook of the United Nations gives population densities per square mile of Barbados as 1443; Netherlands (Holland) 844; and USA 57. Dr. Williams was discussing the 'quality' of life for people living in different densities. Clearly the nature of the environment influences the density at which it can be comfortably populated. Population densities for the other Caribbean countries are as follows:

Under 50 people per square mile: Guyana (8); Surinam (9); Belize (14); and Bahamas (31).

50 to 199 people per square mile: Haiti (56); Cayman Islands (85); Cuba (179); and British Virgin Islands (183).

200 to 399 people per square mile: Dominica (288); Montserrat (287); and Antigua (388).

Over 400 people per square mile: Jamaica (411); St. Kitts, Nevis, Anguilla (428); St. Lucia (439); Grenada (444); Puerto Rico (818); and Bermuda (2484).

CANDI NEWS

"THE BEST PREPARATION FOR TOMORROW IS TO DO TODAY'S WORK
SUPERBLY WELL. DID WE? CAN WE? SHALL WE?"*

At the recently concluded 2nd Annual Meeting of the Caribbean Association of Nutritionists and Dietitians held in Jamaica, members were urged to do their work so well that tomorrow will see regionalism in Food and Nutrition Policies, where Dietitians and Public Health Nutritionists are together outlining strategies which will ensure adequate levels of nutrition to all members of society.

The specialists were reminded that 'food' is what people eat lest their well-meaning messages fail to arrive in the family pot.

In the Caribbean we are working for tomorrow's world where optimum nutrition will be an attainable goal for all, not be a mirage on the golden horizon of time.....and we plan to do today's work superbly well before we re-convene in Guyana next year.

Will you join us in our endeavour?

*This was written by Miss Ena Walker, Dietitian, Ministry of Health, Brickdam, Georgetown, Guyana.

EDITORIAL

"Change is inevitable in the modern world. No man can escape from change. The only choice for any society is whether to change of its own volition, steering in its own chosen direction, or whether to be changed by choices and decisions made by others elsewhere".

Julius K. Nyerere
President of Tanzania
(Speaking at UWI on
September 16, 1974).

Malnutrition and gastro-enteritis must be eliminated from our communities. The strategy and plan of action to combat these two interrelated conditions (page 166) provides a basis for self-help in this respect. To ensure that the ship will not founder for want of a helmsman individuals in each territory of the area need to commit themselves to steering this chosen strategy to success.

The Housewives Association of Trinidad and Tobago (HATT) realizing that choices and decisions must be made at home, has embarked on a breast-feeding campaign with the help of the Association of Advertising Agencies of that country. A description of this attempt to encourage what is perhaps the ultimate in self-reliance is published on page 205.

STRATEGY AND PLAN OF ACTION TO COMBAT
GASTRO-ENTERITIS AND MALNUTRITION IN
CHILDREN UNDER TWO YEARS OF AGE

TERMS OF REFERENCE

Resolution No. 7 of the Fifth Caribbean Health Ministers Conference held in Dominica in February 1973 states:

THE CONFERENCE,

Recalling Resolution 16 adopted at the Fourth Caribbean Health Ministers Conference,

Knowing the large preventable waste of life caused by Gastro-enteritis and malnutrition in children under two years of age,

Concerned over the grave implications of a preventable condition which, arising in early infancy, may permanently impair the mental development of a child.

1. CALLS UPON the Caribbean Food and Nutrition Institute, The Faculty of Medicine of the University of the West Indies, PAHO, FAO and the Secretariat of the Caribbean Health Ministers Conference to cooperate in formulating a strategy and plan of action to deal with these conditions;
2. REQUESTS the Executive Secretary to coordinate these efforts and report on the results to the Sixth Caribbean Health Ministers Conference;
3. REQUESTS the Executive Secretary to transmit copies of this Resolution to the Dean of the Faculty of Medicine of the University of the West Indies, the Director of CFNI, the Director of PASB, and the Director General of FAO.

SUMMARY

This *strategy and plan of action to combat gastro-enteritis and malnutrition in children under two years of age* is based on a four day Technical Group Meeting held in St. Vincent in January 1974 for this purpose.

Seven overall goals have been set for attainment by 1980. These are expressed in terms of morbidity and mortality and, in each case, the degree of improvement is stated as a specific percentage reduction (p. 170).

The strategy and plan of action is presented under 10 subject headings. In each case there is a background statement leading into a group of recommendations to which target dates have been assigned.

Widely distributed *safe water supplies* (p. 171) and adequate *sewage and solid waste disposal* (p. 172) are identified as the most urgent needs within the environmental health services.

The *Maternal and Child Health Services* must be improved by adopting measures to increase their coverage and outreach into the community. Among these are improved staffing and training, better physical facilities, and upgraded surveillance techniques (p. 172).

The importance of the role of *family planning* is emphasised in the call for greater government support for such programmes (p. 179). *Immunization* is also stressed as a significant aspect of improved child health and targets are accordingly set out (p. 176).

Breast feeding is given a place of unique importance in this strategy because of the great contribution its wider practice can make towards good nutrition and the avoidance of gastro-enteritis in young children (p. 178).

A *supplementary feeding programme* is accepted as a useful instrument in the execution of the plan of action. A fresh approach to its implementation is, however, recommended. (p. 186).

With regard to the *treatment of malnutrition and gastro-enteritis*, the need for a standardised, practical management routine is to be met by the publication and distribution of a manual by the U.W.I.

Coordinated action between the ministries of health and education is considered a prerequisite to the long overdue development of *nutrition education* in schools. But the need for other forms of nutrition education, especially in the context of *consumer education* is also stressed.

Inter-ministerial coordination between the education, health, economic planning, trade, agricultural and community development sectors is of the utmost importance if appropriate measures relating to food and nutrition are to be adopted by any country in the region. Hence, the establishment of *national food and nutrition policies* is seen as a major component of a strategy and plan of action against malnutrition and gastro-enteritis.

The inclusion of *socio-cultural* and *legislative* considerations makes for a comprehensive approach to the problem under review. Appropriate studies of attitudes and behaviour in relation to childhood malnutrition are needed to expand our understanding of the problem. Revised legislation, on the other hand, is needed to provide strength for action against social ills such as non-support of children by fathers, and misleading food advertising.

The strategy and plan of action aims at being sufficiently general to be applicable to all territories within the region; however, directions and targets have been made very specific wherever this appeared to be warranted and practicable.

PREFACE AND OVERALL GOALS

In response to Resolution No. 7 of the Fifth Caribbean Health Ministers Conference of February 1973, the Executive Secretary convened a meeting of a steering committee comprising members of staff of CFNI, the Faculty of Medicine, UWI, PAHO/WHO and FAO. Arising from this it was decided to produce the Strategy and Plan of Action called for by means of consultation with selected technical staff of the Ministries themselves. The mechanism adopted was that of a regional Technical Group Meeting. This was held January 8-11, 1974, funded by UNICEF through CFNI and PAHO, and hosted by the Ministry of Health, St. Vincent, which also met part of the local costs.*

This document stems directly from the meeting. Its purpose is to furnish as comprehensive an answer as possible by technical personnel to the question of the political authorities: "What can be (realistically) done to conquer this problem?" It is multipart in its answers because the causes of the problem are multipart. It strives to keep at a level within the financial and human resources capacity of all the governments. It is implicit, however, that the authors believe that any government which adopts and implements the major part of this plan of action on the time-scale suggested will achieve a major part of the targets of reduction of mortality and sickness which preface the plan (p. 170).

It is clear from the Resolution that the Ministers are fully conscious of the grave implications of the loss of life, damage to physical and mental growth, and general waste of actual and potential resources which these combined conditions of gastro-enteritis and protein-calorie malnutrition in children under two years of age are causing to the countries of the Caribbean.

The foreseeable ultimate objective is surely that the children under two years of age in this area should have nutritional status little different and mortality and morbidity rates no higher than those generally obtaining in North America and Europe. Gastro-enteritis and malnutrition account for so great a proportion of the excess mortality and morbidity that their reduction to the degree set out in this document would take the area well over half way to this objective.

*See list of participants on pages 200 and 201

OVERALL GOALS FROM NOW TO THE END OF 1980

It is recommended that the following seven overall goals be adopted by each country:

Morbidity:

- I. REDUCTION IN THE PREVALENCE OF SEVERE PROTEIN-CALORIE MALNUTRITION (GOMEZ GRADE III AND KWASHIORKOR) IN CHILDREN UNDER TWO YEARS AGE BY 60% OR TO A LEVEL OF LESS THAN 1 IN 200 CHILDREN.
- II. REDUCTION IN THE PREVALENCE OF GOMEZ GRADE II PROTEIN-CALORIE MALNUTRITION IN CHILDREN UNDER TWO YEARS AGE BY 50% OR TO A LEVEL OF LESS THAN 1 IN 15 CHILDREN.
- III. REDUCTION BY 50% IN THE PREVALENCE OF ANAEMIA IN PREGNANCY.

Mortality by Specific Cause:

- IV. REDUCTION BY 50% IN THE MORTALITY FROM GASTRO-ENTERITIS.
- V. REDUCTION BY 85% IN THE MORTALITY FROM PROTEIN-CALORIE MALNUTRITION IN CHILDREN UNDER TWO YEARS.

Total Mortality, Age 29 days to 23 months:

- VI. REDUCTION OF THE POST-NEONATAL MORTALITY RATE BY 40% IN THOSE COUNTRIES WHERE THE ANNUAL RATE 1970-72 WAS UNDER 25 PER 1000 LIVE BIRTHS, REDUCTION BY 60% IN THOSE COUNTRIES WHERE THE POST-NEONATAL INFANT MORTALITY RATE WAS OVER 25.
- VII. REDUCTION OF THE 2ND YEAR MORTALITY RATE TO LESS THAN 8 PER 1000 IN ALL THE COUNTRIES OF THE AREA; AND BY 33% IN COUNTRIES WHERE THE 2ND YEAR MORTALITY RATE IS ALREADY LESS THAN 12 PER 1000.

In the plan we deal first with measures entirely within the scope or potential scope of the Health Sectors, then with matters of education in the broadest sense, then with economic and social matters. In each part targets or objectives are proposed for the consideration of governments and means of reaching these targets or objectives are briefly outlined. The document concludes with a summary of legislative or regulatory action called for and some suggestions as to initiating and maintaining implementation of the strategy and plan of action.

THE STRATEGY AND PLAN OF ACTION

1. ENVIRONMENTAL HEALTH SERVICES

SAFE WATER SUPPLIES

There remains, in spite of many improvements in the last two decades, a double problem of quantity and quality. In most countries, with few exceptions, there is still a substantial proportion of rural dwellings with neither piped water in the house nor immediate access to it. Moreover, some small rural piped water supplies are contaminated and untreated. The final goal must surely be to have pure water piped to every house. Towards this end it is recommended that:

- 1.1. EACH GOVERNMENT SHOULD AIM BY 1980 TO REDUCE BY HALF THE PERCENTAGE OF DWELLINGS WHICH DO NOT YET HAVE WATER CONNECTIONS IN THE HOME, OR AT THE VERY LEAST A SHARED FACILITY IN THE IMMEDIATE "YARD".

In the implementation of this target, it is suggested that:

- 1.1.1. Since no regular water quality standard exists, the WHO "International Standards for Drinking Water" should be adopted, or the U.S. Public Health Standards. Target date: 1977.
- 1.1.2. A staged programme for water quality control should be developed and implemented, based on population served and water quality, as outlined in the report of Mr. L.T. Vlassoff*. Target date: begin in 1975.
- 1.1.3. The Ministries concerned should develop and implement emergency procedures to be used whenever test samples yield positive bacteriological results. Target date: 1976.
- 1.1.4. As soon as possible all piped water supplies should be chlorinated. Target date for completion: 1980.

SEWAGE DISPOSAL

A proportion of homes, even a substantial proportion in a few rural areas, lacks any sanitary means of disposal of excreta. Unlike the provision of safe piped water, this does not call for large

*Distributed 10 January 1973 and obtainable from the Canadian High Commission or from PAHO/WHO Zone Office, Caracas.

financial investments, but for the provision of slabs, the education of the public in hygiene and the unremitting application of the public health law. The ultimate goal must be a water-closet in every home. It is recommended that:

- 1.2. AS A TARGET FOR 1980, GOVERNMENTS SHOULD AIM TO REDUCE TO ZERO THE NUMBER OF DWELLINGS, NO MATTER HOW ISOLATED, WITHOUT AN APPROVED SYSTEM (WATER-CLOSET OR PIT LATRINE).

SOLID WASTE DISPOSAL

In cities and towns garbage contributes considerably to the fly nuisance, itself a transmitter of gastro-enteritis. It is recommended that:

- 1.3. A TARGET FOR 1980 SHOULD BE ADOPTED OF ESTABLISHING IN 90 PER CENT OF ALL TOWNS OF MORE THAN 20,000 POPULATION A SATISFACTORY SYSTEM FOR THE COLLECTION, TRANSPORT, PROCESSING AND DISPOSAL OF SOLID WASTE.

- 1.3.1. Educational campaigns on solid waste disposal be conducted in rural areas, where the fly nuisance is also serious.
Target date: begin in 1975.

2. MATERNAL AND CHILD HEALTH SERVICES

It is clear that these services are the main point of contact between government and the mother and child, and must therefore form a major part of the strategy and plan of action of each government attempting to remedy this problem.

COVERAGE OF CHILD HEALTH CLINICS

- 2.1. A TARGET SHOULD BE ESTABLISHED FOR 1980 THAT 90%* OF CHILDREN UNDER TWO SHOULD ATTEND THE CHILD HEALTH CLINIC (INFANT WELFARE CLINIC) AT SUITABLE REGULAR INTERVALS, DETERMINED BY THE "AT-RISK" STATUS, CURRENT HEALTH, NUTRITIONAL AND IMMUNIZATION STATUS OF THE CHILD. (SUCH ATTENDANCE SHOULD CONTINUE BEYOND THE AGE OF TWO IN NECESSARY CASES).

*except in relatively well-to-do areas where many use private doctor services.

In order to achieve this target it will be necessary for the government to adopt all or most of the following measures:

- 2.1.1. Review the number and siting of clinic sessions (which may be held at health centres and clinic buildings or in "out-stations" such as church halls, etc.) in relation to population distribution, and take appropriate action. Target date: 1976.
- 2.1.2. Ensure that the name, age and address of every child under two in the defined health district covered by the clinic is known to the staff of the clinic, and that a simple card-index system is set up to indicate non-attenders and defaulters. For this and other reasons in respect of care of the mother and newborn, governments should consider introduction of regulation or legislation securing notification of birth.* Target date: 1976.
- 2.1.3. Implement a visiting system for non-attenders and defaulters using all appropriate public health staff, and not public health nurses only. Target date: 1976.
- 2.1.4. Employ auxiliaries (e.g. Community Health Aides) and/or volunteers to assist at clinic sessions and in home visiting. Target date: 1976.
- 2.1.5. Review the waiting time and accommodation for mothers and infants at clinic sessions, ensuring by a rough appointment system if necessary that waiting time is reduced to the minimum and that suitable seating accommodation is available. Target date: 1975.
- 2.1.6. Encourage attendance by having available for those who need it a suitable infant weaning food (see 9.1.1.) at a price within the reach of all mothers. Target date: 1977.
- 2.1.7. Introduce legislation requiring that all children entering any kind of school or day care centre be immunized with triple (DPT), oral polio, BCG and measles vaccines (see 3.2.) before entry. Target date: 1976.

*"Notification of birth" is quite different from Registration of Birth and does not replace Registration. In the case of Notification it is incumbent on the attendant at birth (not the parent) to notify the birth within 48 hours, not to the Registrar of Births and Deaths but to the health authority of the district where the mother normally resides.

- 2.1.8. Pay special attention, in basic and in-service training and in supervision, to the cultivation and expression of appropriate attitudes by clinic staff towards mothers of children. Target date: 1975.
- 2.1.9. Assess and regularly monitor "coverage", (Target date: 1975) viz. (a) proportion of eligible children in a district ever attending clinic; (b) the proportion of actual attendances during a specific period made over expected attendances which would be made if all children attended on all occasions expected. For the former figure the target of 90% is suggested (see 2.1.). For the latter figure a target of 60% is suggested by 1980.
- 2.1.10. Encourage the formation of Community Health Associations which could give local support to Maternal and Child Health activities. Target date: 1976.

SURVEILLANCE OF NUTRITIONAL STATUS

The weighing of children and the charting of successive weights on a suitable graph scale is necessary to early diagnosis. In fact, the weighing of a child and the charting of its weight on a graph to determine the grade of nutritional status is as basic a step in the diagnosis and management of an undernourished child as is taking and charting the temperature in the diagnosis and management of a patient with fever. Nevertheless at many clinics children are weighed but no chart is used. This deficiency destroys much of the usefulness of the clinic in combatting protein-calorie malnutrition. Differentiation between various grades of nutritional status is essential to the efficient functioning of a child health clinic. Therefore it should be a target that:

- 2.2.1. All children under two attending child health clinics should not only be weighed, but their weights should be successively charted on individual weight charts which are part of the record, and their status thus differentiated between the Gomez Grades of Weight for Age (Normal and Malnutrition Grades I, II and III)* and their progress supervised. In order to achieve this target, all clinics and hospitals must be equipped with beam balance infant scales. Target date: 1 January 1976.

*except where oedema is present.

Differentiation by weight for age status alone falls short of adequacy if prevention is the objective. In addition it is necessary to identify those families among whose young children protein-calorie malnutrition and frequent recurring attacks of gastro-enteritis are especially likely to occur - "at-risk" children or "at-risk" families rather - and concentrate preventive efforts there. Therefore:

- 2.2.2. *Each country should objectively examine the common features of families and children among whom malnutrition and recurrent gastro-enteritis occur, and by 1977 define at-risk criteria and communicate these criteria to health staff, thus enabling at-risk children or families to be identified and preventive measures taken accordingly.*

The current situation, which often applies in this combined problem of gastro-enteritis and p.c.m., lack of coordination between the hospital and the public health services, gives rise to much concern. It can happen that a child is admitted to hospital and is discharged to the same home environment which produced the illness, without the public health authorities being aware of illness, admission or discharge. Such a situation impedes follow-up and makes relapse more likely. Therefore it is recommended that:

- 2.2.3. *A regular system be instituted whereby the public health nurse is notified whenever a child from her district is admitted to hospital; and notified again when that child is discharged. Furthermore the hospital must have a list of the dates, times and places of all child health clinics in its area and give to the mother, on discharge of the child, an appointment letter for the next child health clinic in her district. Target date: 1975.*

It having been noted that in one of the larger countries of the area orphanages are an excessively frequent source of admissions for severe malnutrition to the children's ward of the capital city, and that in another, children in "places-of-safety" have a prevalence of severe p.c.m. (Gomez Grade III) ten times higher than that of the child population in general; it is recommended that:

- 2.2.4. *All orphanages and "places-of-safety" be inspected regularly and annually licenced; and that an excessive incidence or prevalence of protein-calorie malnutrition should be cause for refusal of a licence and closing down of the institution. Target date: 1975.*
- 2.2.5. *The same provisions of inspection and licensing should apply to day care centres, nurseries and child minders,* except that here criteria shall be limited to hygienic surroundings and care and adequate feeding. Target date: 1976.*

*a definition will be needed for child minders. For example, "minding for profit more than three children under 5 years of age not belonging to the same family".

Finally it is noted that in the West Indies, as elsewhere, successful programmes in this field have often owed much to the dedication and effort of a particular person. The devoted application of individuals to this field cannot be legislated for by governments nor obtained by administrative means, but it can be encouraged. It is recommended that:

- 2.3. EACH GOVERNMENT SHOULD ENDEAVOUR TO DESIGNATE IN 1974 IN THE SMALLER ISLANDS ONE PERSON, IN THE LARGER COUNTRIES A SMALL GROUP OF PERSONS WHOSE DUTY AND FUNCTION, INDEED WHOSE OBSESSION, WOULD BE TO STRIVE FOR THE IMPLEMENTATION OF THESE IMPROVEMENTS IN THE MCH SERVICE AND OF THIS STRATEGY AND PLAN OF ACTION IN GENERAL; AND THE GOVERNMENT SHOULD SUPPORT THE ACTIVITIES OF THIS PERSON OR GROUP WITH ALL REASONABLE MEANS AT ITS COMMAND.

It is detrimental to the success of programmes to have frequent changes of staff, and whilst in many cases this is not altogether in the Ministry's control, some greater stability to these MCH programmes can be attained by giving them a greater degree of priority in the overall health programme. Thus it is recommended that:

- 2.4. IN MATTERS OF PROMOTIONS, TRANSFERS OR OTHER REDEPLOYMENT OF STAFF, DUE CONSIDERATION SHOULD BE GIVEN TO THE MAXIMUM UTILIZATION OF STAFF IN THESE ASPECTS OF CHILD HEALTH.

3. IMMUNIZATION

The interaction between malnutrition in early childhood and infections is well-known; and the fact that in the Caribbean it is gastro-enteritis which is the infection principally associated with malnutrition is indeed implicit in the text of the Resolution No. 7 of the last CHMC to which this strategy and plan of action is a response. However, other infections and in particular whooping cough (pertussis) commonly precipitate severe malnutrition in a child previously only moderately malnourished. Several paediatricians report that measles, which has been thought to be a mild disease in the West Indies now appears with increasing frequency as such a precipitator. Poliomyelitis, tetanus and diphtheria are unnecessary public health problems, so that their inclusion in the schedule below needs no explanation. Tuberculosis among children under two is no longer common, but sufficiently serious when it does occur that BCG vaccination is justifiable. Therefore it is recommended that:

- 3.1. A COMPREHENSIVE SCHEDULE OF IMMUNIZATION BE OFFERED TO ALL INFANTS COMPRISING THE FOLLOWING:
 - a) THREE DOSES OF TRIPLE VACCINE (D.P.T.) PLUS A BOOSTER DOSE ONE YEAR AFTER THE 3RD DOSE;

- b) THREE DOSES OF ORAL POLIO VACCINE, PLUS A BOOSTER DOSE WITH THE BOOSTER D.P.T.;
- c) BCG AT BIRTH OR AT ANY TIME DURING THE FIRST YEAR;
- d) LIVE ATTENUATED MEASLES VACCINE AT AGE NOT LESS THAN NINE MONTHS AND PREFERABLY BEFORE 15 MONTHS.

TARGET DATES: for a), b) and c) 1975; for d) MEASLES, 1976.

It should be noted that the triple vaccine should be administered simultaneously with the oral polio vaccine.

It is recommended that:

- 3.2. GOVERNMENTS INTRODUCE AND ENFORCE LEGISLATION REQUIRING ALL CHILDREN TO BE COMPREHENSIVELY IMMUNIZED AS A PRE-REQUISITE OF ADMISSION TO ANY SCHOOL (THE FIRST SCHOOL, WHETHER IT BE PLAY-SCHOOL, BASIC SCHOOL, OTHER DAY CARE CENTRE OR PRIMARY SCHOOL). TARGET DATE: 1976.
- 3.3. IN THUS LEGISLATING THE GOVERNMENTS ARE SETTING AN OBJECTIVE OF 100 PER CENT COMPREHENSIVE IMMUNIZATION BEFORE THE AGE OF SCHOOL ENTRY. HOWEVER, THEY SHOULD ALSO ESTABLISH A TARGET AIMING AT THE COMPLETION OF COMPREHENSIVE IMMUNIZATION BY 80 PER CENT OF THESE CHILDREN BY THE AGE OF TWO YEARS. TARGET DATE: 1977.

In order to achieve these targets it is very advisable to ensure that:

- 3.3.1. All the syringes, needles and sterilizers which will be needed be provided. Target date: 1975.
- 3.3.2. Vaccines do not frequently run out of stock at clinics and never run out of stock at the central level.
- 3.3.3. All clinics should have refrigeration facilities, and cold boxes for "out-station" clinic sessions. Target date: 1975.
- 3.3.4. A record of immunization should be kept both at the clinic and by the parent. In other words the parents must have an immunization card, (which can be combined with a clinic appointment card), which must be stamped and signed by the clinic staff. Target date: 1975.

- 3.3.5. *Each clinic session should generate a record of immunizations performed, not merely the number of doses of each type of vaccine, but in the case of D.P.T. and polio, how many of these were first, second, third and booster doses. These records are to be periodically summated and forwarded to the district and central level. Target date: 1975.*

4. BREAST-FEEDING

One of the principal causative factors at the root of early onset of malnutrition combined with recurrent gastro-enteritis is the practice of bottle feeding. This practice has spread in the last 25 years to all classes in all the countries, to the extent that now in the largest cities of the region as little as five per cent of babies are solely breast-fed up to the age of four months. Most are fed either with the bottle only or with mixed pattern of breast and bottle. The expensiveness of the powdered milk, ignorance of the right proportions to mix, unawareness of the necessity of virtual bacterial sterility in baby feeds, and lack of refrigeration, convenient stove, and a stock of bottles, all these combine to be a major cause of the malnutrition - gastro-enteritis syndrome so often seen clinically.

The situation is serious enough to warrant that governments take positive steps to do all in their power to avert this daily tragedy of waste.

Some criterion is needed to judge success or failure in these efforts, and it is recommended that:

- 4.1. COUNTRIES ATTEMPT TO DOUBLE BY 1980 THE PERCENTAGE OF WOMEN FEEDING THEIR BABY SOLELY ON THE BREAST AT THREE MONTHS.

A deliberate and concerted plan of action to reach this should include:

- 4.1.1. *Equipping all medical and nursing personnel with modern knowledge of the psycho-physiology of lactation. Target date: 1976.*
- 4.1.2. *A deliberate campaign to promote lactation by education of schoolgirls, of mothers-to-be at antenatal clinics, and of the general public by use of the mass media; to establish lactation in obstetric wards; and to protect lactation by reassurance and advice at the postnatal and child health clinics. Target date: 1975.*

Damage is done by sophisticated advertising of powdered milks for infants and even more in some countries by the activities of "milk-nurses". Therefore, it is recommended that:

- 4.1.3. All the milk companies should be induced, if not by agreement, then by appropriate legislation, to adopt and abide by a code of ethical practice in advertising powdered milks for infants. Target date: 1975.
- 4.1.4. The principles outlined in "Guidelines to Young Child Feeding in the Contemporary Caribbean"* should be adhered to as a norm of practice in the government health services.
- 4.1.5. Measures should be taken to facilitate lactation in the working mother, such as provision of creches by factories employing large numbers of women.

5. FAMILY PLANNING AND ANTENATAL CARE

FAMILY PLANNING

It is factually established from nutritional surveys in the Caribbean that inadequate nutrient intake and undernutrition of children is more common in large than in small families and where there are short intervals between births. The recent increase in the percentage of births where a teenager is the mother is also a cause for concern. It is also necessary to pay more attention to motivation of men to a more responsible view of paternity. It is recommended that:

- 5.1. EVERY GOVERNMENT WHICH HAS NOT ALREADY DONE SO SHOULD FORMULATE A POSITIVE POLICY AND PROGRAMME ON FAMILY PLANNING, WITH THE EMPHASIS ON THE IMPORTANCE OF FAMILY PLANNING TO THE HEALTH OF MOTHERS AND CHILDREN. TARGET DATE: 1975.
- 5.2. IN ACCORDANCE WITH THE LOCAL SITUATION, ADVICE AND ASSISTANCE WITH CONTRACEPTIVE MEASURES SHOULD BE AVAILABLE AT ALL GOVERNMENT HOSPITALS, HEALTH CENTRES AND CLINICS. TARGET DATE: 1976.

*PAHO Scientific Publication No. 217. Washington 1970. Copies obtainable through the Caribbean Food and Nutrition Institute.

CARE OF THE WOMAN IN PREGNANCY AND DURING AND AFTER CHILDBIRTH

- 5.3. ALL MINISTRIES OF HEALTH SHOULD IN 1975 EXPLORE THE POSSIBILITY OF GIVING TRAINING AND ASSISTANCE TO NANAS (UNTRAINED PRACTITIONERS OF MIDWIFERY) WITH A VIEW TO INCORPORATING THEM INTO THE HEALTH SERVICES IN ROLE ANCILLARY TO, INSTEAD OF ALTERNATIVE TO, THE REGULAR MIDWIFERY SERVICE. IN SUCH TRAINING INSTRUCTION IN HYGIENE AND INFANT FEEDING SHOULD BE A MAJOR FEATURE.

6. MANAGEMENT AND FOLLOW-UP OF GASTRO-ENTERITIS AND MALNUTRITION

The case-fatality rate of children hospitalised with these conditions varies widely, and in general outside the main hospitals of the area is unsatisfactory. Moreover, again with certain exceptions, follow-up is also unsatisfactory and relapse rates high. Finally a number of children are being admitted unnecessarily because of failure to treat them adequately on an out-patient or clinic basis. It is recommended that:

- 6.1. MINISTRIES OF HEALTH UNDERTAKE BEFORE THE END OF 1975 A SYSTEMATIC REAPPRAISAL OF THE METHODS OF MANAGEMENT AND FOLLOW-UP OF GASTRO-ENTERITIS AND P.C.M. BOTH IN HOSPITALS AND CLINICS.

In this reappraisal the following measures are recommended:

- 6.1.1. *The Manuals being published on in-patient treatment of this condition from the Faculty of Medicine, U.W.I. should be provided to responsible staff, short seminars held on the subject, and the procedures outlined in the Manuals become the normal procedures of the service. Target date: 1976.*
- 6.1.2. *Adequate equipment for intravenous rehydration should be provided in all hospitals receiving sick children, and at certain health centres which are far from hospitals but have medical supervision; and material for oral rehydration should be provided at all health centres. Target date: 1976.*
- 6.1.3. *All children under 5 years admitted to hospital for whatever reason should be weighed on admission and discharge, and their weight charted periodically throughout their stay, and they should be classified as Normal, or malnutrition Gomez I, II, or III.* Target date: 1975.*

*except in the case of kwashiorkor, which take precedence over other classifications of malnutrition.

6.1.4. Every child admitted to hospital with gastro-enteritis and p.c.m. should be followed up regularly at its Child Health Clinic until the age of 2½ years (or if the child is over 18 months of age, for a minimum of one year). Adequate follow-up should be instituted where such does not exist, by means of:

- a) Notification at the time of admission for gastro-enteritis or p.c.m. to the health authorities of the district where the child resides.
- b) Appointment made by the hospitals on discharge (if it does not run its own special follow-up service) for the mother and child at the next child health clinic in their district.

6.1.5. Since gastro-enteritis is infectious, completely adequate facilities should be provided for maintaining proper hygiene in nursing. A special review of this matter should be undertaken. Target date: 1975.

If records however simple are to be kept, sufficient for the purposes above and coordination between the curative and preventive services in respect of p.c.m. and gastro-enteritis is to be improved, then some assistance is required for keeping these records. This assistance need not be at more than at clerical level.

6.1.6. Therefore it is recommended that one medical record clerk be provided for every 50 children's hospital beds.

7. DATA NECESSARY FOR IMPLEMENTATION

It is evident that the present information and record systems in operation for gastro-enteritis and malnutrition are inadequate, and re-organization is necessary. Moreover, data should be collected and used at the local as well as the central level, and data forwarded to the central level and there analysed must be fed back to the local level for action.

The Implementation of Resolution No. 19 of the last Caribbean Health Ministers Conference concerning the Caribbean Epidemiological Surveillance Centre would be of considerable value in assisting governments in the development and implementation of notification systems; improvement of diagnosis, including monitoring of water supply systems; tracing the source of outbreaks of gastro-enteritis.

The following measures are recommended:

- 7.1. GASTRO-ENTERITIS (DEFINED AS DIARRHOEA WITH VOMITING WITH OR WITHOUT ISOLATION OF INFECTIVE ORGANISMS) AND SEVERE MALNUTRITION (GRADE III OR KWASHIORKOR) SHOULD BE MADE SPECIALLY REPORTABLE DISEASES. TARGET DATE: 1975.
- 7.2. CENTRAL STATISTICAL OFFICES SHOULD BE REQUIRED AND ENABLED TO INITIATE AND MAINTAIN UP-TO-DATE A SPECIAL ACCOUNT OF DEATHS OF CHILDREN UNDER FIVE YEARS OF AGE, AND TO PRODUCE EARLY EACH YEAR ANNUAL MORTALITY RATES FOR THE FOLLOWING AGE GROUPS:

BIRTH TO 28 DAYS			PER 1000 LIVE BIRTHS			
1 - 5 MONTHS			"	"	"	"
6 - 11 "			"	"	"	"
			PER 1000 ESTIMATED			
12 - 23 "	(2nd year)		POPULATION OF THAT AGE			
24 - 35 "	(3rd ")		"			"
36 - 47 "	(4th ")		"			"
48 - 59 "	(5th ")		"			"

TARGET DATE: begin 1 January 1975.

- 7.3. ALL WARDS RECEIVING YOUNG CHILDREN SHOULD KEEP AN ADMISSION REGISTER FOR THESE CHILDREN WHICH SHALL INCLUDE NAME, ADDRESS, DATE OF BIRTH, WHETHER THIS IS THE FIRST, SECOND OR THIRD, ETC. ADMISSION, INITIAL AND FINAL DIAGNOSIS, WEIGHT AND GOMEZ GRADE RATING ON ADMISSION AND DISCHARGE, DURATION OF STAY IN HOSPITAL. TARGET DATE: 1975.

Once child health clinic records include a weight chart, and coverage is extended towards the targets set, then by monthly compiling of the totals (new or repeat attendances) of children from each clinic grades as normal or Gomez I, II or III, a continuous surveillance system can be brought into operation. This will obviate much of the necessity for recurring national surveys of nutritional status, and provide up-to-date information on continuing basis. It is recommended that:

- 7.4. A CONTINUOUS SURVEILLANCE SYSTEM OF NUTRITIONAL STATUS BASED ON CHILD HEALTH CLINIC RECORDS SHOULD BE INTRODUCED. TARGET DATE: 1977.

8. HEALTH EDUCATION, NUTRITION EDUCATION, CONSUMER EDUCATION

The reasons for the present level of prevalence of gastro-enteritis and protein-calorie malnutrition are multiple and among them that of lack of information features prominently. This lack of information itself can be divided into several aspects, including:

- Lack of information on the part of the public in general;
- Lack of information on the part of mothers of young children;
- Lack of information on the part of school-leavers, soon to be parents;
- Deficiencies in training, or in orientation, or in up-to-date knowledge of methods of management and prevention, on the part of health personnel.

"Lack of information" itself is something of a short-hand term, for it includes to some extent lack of interest or motivation, presence of positive misinformation, and sometimes lack of application of information to a problem about which in fact the person is concerned, a kind of failure to connect.

One major need is to devise and implement in schools a programme of "education for living". By this one means that all children leaving school should do so equipped with a good basic understanding about:

- a) the responsibilities of family life, and elementary psychology;
- b) the processes and implications of sex and reproduction;
- c) hygiene and health;
- d) nutrition as applied to the individual and family;
- e) the care of the infant and young child;
- f) budgeting, saving and wise shopping;
- g) basic gardening, home production and preservation of foods.

These matters may seem quite elementary, but all must be aware of cases of astonishing ignorance and sometimes pathetic anxiety on the part of young people. Yet our school curricula leave much of this elementary family life education to chance or to the initiative and ability of the individual teacher. It is strongly recommended that:

- 8.1. THE MINISTERS OF EDUCATION MAKE A SPECIAL EFFORT TO BRING A SATISFACTORY SYLLABUS CONCERNING THIS MATTER INTO UNIVERSAL USE IN THEIR COUNTRY BY THE BEGINNING OF THE 1976-77 SCHOOL YEAR.

In pursuit of this objective:

- 8.1.1. *The Health Educator or other responsible authority in the Ministry of Health should meet before the end of 1974 with the officers responsible for the curriculum in the Ministry of Education and begin drawing up such a syllabus, for all children, adjusted to age.*

- 8.1.2. *This type of education should be included in the curriculum of Teacher Training Colleges and in-service courses developed for existing teachers. Target date: 1975.*
- 8.1.3. *Materials with which to teach this subject are essential and should be provided to schools. Target date: 1975.*

In respect of the general public the governments are recommended:

- 8.2.1. *To become themselves very actively involved in Consumer Education. Target date: 1975.*
- 8.2.2. *To make greater use of the mass media available to them for promoting good nutrition practices and wise purchase and use of food. Target date: 1975.*
- 8.2.3. *To promote the training in the Commonwealth Caribbean of personnel at B.Sc. level who will provide (a) the specialist teachers in what is still commonly called Home Economics but may be termed in future Consumer Studies; (b) nutritionists and dieticians; (c) specialists in education of rural families through Agriculture and Community Development programmes. Target date: October 1976.*
- 8.2.4. *To institute either voluntary or compulsory control of composition, advertising and labelling in order to eliminate false claims regarding foods and tonics and unethical and nutritionally damaging advertising. Target date: 1975.*

In respect of the education of mothers, particularly young mothers, in infant feeding and care, it is recommended that:

- 8.3.1. *Schedules of lecture-demonstrations should be drawn up for teaching by the health staff in (a) antenatal clinics, (b) child health clinics; and that staff be instructed in the use of these schemes and provided with visual aid materials and a small budget for purchase of foods for demonstrations. Target date: 1976.*
- 8.3.2. *Suitable visual aid material (e.g. flip charts) should be provided to every public health nurse for use at appropriate moments in strengthening and clarifying advice and instruction given during individual consultations. Target date: 1976.*

In respect of health service personnel:

- 8.4.1. *A review of the content in regard to malnutrition and gastro-enteritis of the basic training courses of doctors, nurses, midwives, public health nurses, health inspectors, health educators, and auxiliaries is needed, and suitable amendment made using the Guidelines to Young Child Feeding* as the basis. Target date: 1975.*
- 8.4.2. *In-service refresher courses for already trained personnel on the prevention and management of gastro-enteritis and protein-calorie malnutrition should be carried out in a specific staged programme. Target date: beginning in 1974.*

It is admitted that our own knowledge is inadequate concerning the beliefs, attitudes and practices of parents, families and communities in regard to nutrition, diet, their motivations for change, or of their understanding of the causes of malnutrition and gastro-enteritis. In particular we do not understand the reasons why malnutrition and gastro-enteritis occur in some families while it does not occur in others seemingly equally disadvantaged.

- 8.4.3. *Ministries of Health should support and facilitate research and comparative studies aiming at throwing light on knowledge, attitudes, practices and motivation in these matters and ensure that the results of such studies are communicated to health and education personnel.*

9. ECONOMICS AND AGRICULTURAL MEASURES

It is abundantly and precisely clear from National Food and Nutrition Surveys that the prevalence of p.c.m. in young children is inversely proportionate to the income of the family. They also show that the lower the annual family income per head, the greater the percentage of income spent on food, so that we have a sizeable proportion of the populations of the area spending 85 percent or more of their low income on food, and even so being inadequately fed.

Because we realise that there is little which health workers can do about the fundamental economic situation of the people, we are tempted to put from our minds poverty as a cause of p.c.m. and concentrate on the medical and educational aspects. However, there are certain activities of economic significance which do fall within the scope of the Ministries of Health and Education and are potentially very important. One is the question of supplementary foods for the infant; the other pertains to the proper role of Health and Education Ministries in National Food and Nutrition Policy.

*PAHO Scientific Publication No. 217, 1970. Obtainable through the Caribbean Food and Nutrition Institute.

SUPPLEMENTARY FOODS

For about twenty years now in most of the countries of the region supplementary foods for pregnant and lactating women and for pre-school children have been distributed through the health services. Mainly these foods have been donated by UNICEF or USAID or occasionally voluntary agencies, and have been either Dry Skim Milk (DSM) or since 1968 sometimes Corn-Soy-Milk (CSM) mixture. The difficulties have been:

- uncertainties and interruptions of supply;
- difficulties and expenses of storage;
- difficulties and expenses in distribution;
- DSM at least is not an ideal supplementary food for infants.

It is strongly recommended that:

- 9.1. BEFORE 1st JANUARY 1977, EACH MINISTRY OF HEALTH BE ENABLED TO PURCHASE AT A NEGOTIATED CONTRACT PRICE, FROM A FOOD PROCESSOR IN THEIR OWN COUNTRY OR AT ANY RATE IN THE CARIBBEAN, ADEQUATE QUANTITIES OF AN INFANT WEANING FOOD MADE UP ACCORDING TO THE MINISTRY'S OWN SPECIFICATIONS. (THE CONSTITUENTS OF THE FOOD MAY WELL INCLUDE IMPORTED OR EVEN DONATED FOODS, BUT AT LEAST THE PROCESSING AND PACKAGING SHOULD BE LOCAL).
- 9.1.1. *This food then be sold at clinics (or tickets redeemable at shops, sold at clinics) at a price within the reach of the low-income mothers.*
- 9.1.2. *The quantities of this subsidized food made available to the individual family be related to the child's "at-risk" or nutritional status (see above).*
- 9.1.3. *The food meet the expectations of ordinary people in attractiveness and convenience of presentation and packaging, giving it in the eyes of the mother the status of a bargain rather than that of a charitable donation of a cheap and inferior product.*

An alternative to purchase by contract from a local producer could be for the government to have it processed and packaged by one of its own departments or institutions.

NATIONAL FOOD AND NUTRITION POLICY

In the long run (reckoned in several decades) the problem of protein-calorie malnutrition and gastro-enteritis will, one hopes, disappear with economic and educational development. However, there is probably no government which wishes simply to wait for this to happen if there is anything which can be done to speed the process by technical

and administrative measures. Some of these measures lie within the scope of the Ministries of Health and Ministries of Education (many of them are included in this Strategy and Plan of Action) but many lie outside with Ministries of Agriculture, Trade, Economic Development and Finance. These latter measures include those concerned with the availability of nutritious foods, either from local production or from importation, and their processing and marketing (e.g. price controls on basic foods, manipulations of import duty and granting or withholding of import licences, measures of agricultural administration such as land reform credit, guaranteed prices, investment in infrastructure). They should be aimed at food for the people as well as at improving farm efficiency and farm income and earning foreign currency.

All these measures - the short-term and the medium-term - the Agricultural and Trade measures need to be drawn together, made consistent with each other and integrated with National Development Planning in a *National Food and Nutrition Policy**.

The stages in this process of bringing into being a National Food and Nutrition Policy are:

1. Assessment of the Food and Nutrition situation of the country.
2. Formulation of policy and planning of programmes.
3. Implementation.

No Caribbean country has reached the stage of implementation yet, but several have a fairly adequate amount of food and nutrition data to enable an assessment to be made, and a few are in the process of formulation of policy and programme planning. With countries being at different stages in the process it is difficult to set a realistic target for all, but let the following 1978 target be accepted with the understanding that some countries should reach the target by 1976. It is therefore recommended that:

- 9.2. **EVERY COUNTRY IN THE AREA SHOULD HAVE A NATIONAL FOOD AND NUTRITION POLICY INTEGRATED WITH THE NATIONAL DEVELOPMENT PLAN, IN COURSE OF IMPLEMENTATION BY 1 JANUARY 1978.**

Finally, some Ministries of Health may feel that some more immediate action is needed in respect of the availability of nutritious foods. It is recommended therefore that, except in cases where formulation of food and nutrition policy is already in progress:

*(For a more detailed explanation, see the article by R. Cook and Y.H. Yang, "National Food and Nutrition Policy in the Commonwealth Caribbean", *Cajanus* Vol. 6, June 1973, pages 77-94).

- 9.3. EACH MINISTRY OF HEALTH SHOULD BEFORE THE END OF 1974 UNDERTAKE SPECIFIC CONSULTATIONS WITH THE MINISTRIES OF AGRICULTURE AND TRADE CONCERNING THE FUTURE AVAILABILITY WHETHER FROM HOME PRODUCTION OR IMPORTS OF BASIC NUTRITIONALLY-NECESSARY* FOODSTUFFS AT PRICES WITHIN THE REACH OF ALL THE POPULATION.

10. SOCIO-CULTURAL ASPECTS

Even the conditions covered by the broad terms of poverty and lack of knowledge do not fully describe the causes of malnutrition and gastro-enteritis in young children. There are also socio-cultural reasons, and prominent among them lack of paternal support. No government can in one generation reverse the ill-effects of several centuries, but because of the urgency of the specific problem under consideration, governments may consider the following actions:

- 10.1.1. *To mount campaigns through the mass media concerning paternal responsibility. Target date: 1975.*
- 10.1.2. *Where necessary to amend legislation and/or current practice in order to facilitate the process of the obtaining of paternal financial support. Target date: 1975.*
- 10.1.3. *To review current and draft social legislation and national insurance regulations with a view to seeing that the interests of mother and child are adequately protected. Target date: end of 1974.*

LEGISLATION

As parts of this strategy and plan of action several legislative measures have been mentioned (or regulatory measures in cases where the enabling legislation already exists). They are summarized here, having been referred to elsewhere.

- 1. Control of misleading advertising related to nutrition and of unethical practices in promotion of bottle feeding. (4.1.3.)
- 2. Requirements regarding standards of nutrient composition and prevention of false descriptions in labelling and advertising of processed foods. (8.2.4.)

*i.e. foods which are (a) prominent in the relatively restricted diet of the low-income groups, and (b) provide a substantial amount of calories and/or protein at relatively low-cost.

3. Requirement regarding completion of immunization as a pre-requisite of school entry. (3.2.)
4. Establishment of standards and regular inspection and annual licensing of orphanages, "places-of-safety" and day care centres, nurseries and child minders. (2.2.5.)
5. Regulations or legislation bringing into effect the system of notification of birth. (2.1.2.)
6. Review of current and draft social and insurance legislation and regulations to ensure that the interests of mother and child are fully protected. (10.1.3.).
7. Revision of legislation where necessary in order to facilitate obtaining of parental support. (10.1.2.)

SOME OBSERVATIONS ON THIS STRATEGY AND PLAN OF ACTION AND ITS IMPLEMENTATION

Successful implementation of this Strategy and Plan of Action will call for:

- a) a willingness to allocate many small or medium-size sums of money to essential improvements (e.g. weighing scales, charts, transport, better accommodation at clinics, visual aids, etc.); and a fairly substantial sum to supplementary infant foods;
- b) a determination to allocate priority to this matter during the remainder of a decade and to press forward now with the measures suggested, and to keep pressing towards these programme targets with persistence;
- c) a recognition by people at all levels in Ministries of Agriculture, Trade, Finance, Community Development, Economic Planning and Education, in addition to Health, that the Caribbean has reached a very critical point in its history as regards food and nutrition, and that this basic necessity of life and fundamental human right must take a higher priority than hitherto.

Because it is noticed that among the characteristics of successful programmes are usually firstly the activity of one or a small group of dedicated and enthusiastic workers and secondly a feeling of involvement by many, three suggestions are made in respect of implementation:

1. *The designation and support of one person (or in the larger countries a small group of persons) whose duty and even obsession will be the implementation of the plan of action.*

2. A national meeting of all interested persons (non-technical as well as technical) annually to initiate, stimulate, undertake, review and evaluate progress in implementation.
3. In connection with these meetings and in support of the coordinator or coordinating group designated, the governments may consider requesting relevant organizations functioning in the region, viz. PAHO/WHO, CFNI, and UWI to consult with each other and undertake a planned programme, 1975-1980, of follow-up visits to each territory in order to provide assistance in orientation and in-service training, and whatever other support is practicable.

LISTING OF OVERALL GOALS AND PROGRAMME
TARGETS IN ABBREVIATED FORM

I. OVERALL GOALS FOR THE DECADE

- I. REDUCTION IN THE PREVALENCE OF SEVERE PROTEIN-CALORIE MALNUTRITION (GOMEZ GRADE III AND KWASHIORKOR) IN CHILDREN UNDER TWO YEARS OF AGE BY 60% OR TO A LEVEL OF LESS THAN 1 IN 200 CHILDREN.
- II. REDUCTION IN THE PREVALENCE OF GOMEZ GRADE II PROTEIN-CALORIE MALNUTRITION BY 50% OR TO A LEVEL OF LESS THAN 1 IN 15 CHILDREN.
- III. REDUCTION BY 50% IN THE PREVALENCE OF ANAEMIA IN PREGNANCY (SINCE THIS CONDITION ALSO IS CONTRIBUTORY TO THE PROBLEM AND LARGELY PREVENTIBLE).
- IV. REDUCTION BY 50% IN THE MORTALITY FROM GASTRO-ENTERITIS.
- V. REDUCTION BY 85% IN THE MORTALITY FROM PROTEIN-CALORIE MALNUTRITION IN CHILDREN UNDER TWO.
- VI. REDUCTION OF THE POST-NEONATAL MORTALITY RATE BY 40% IN THOSE COUNTRIES WHERE THE ANNUAL RATE 1970-72 WAS UNDER 25 PER 1000 LIVE BIRTHS, REDUCTION BY 60% IN THOSE COUNTRIES WHERE THE POST-NEONATAL INFANT MORTALITY RATE WAS OVER 25.
- VII. REDUCTION OF THE 2ND YEAR MORTALITY RATE TO LESS THAN 8 PER 1000 IN ALL COUNTRIES OF THE AREA; AND BY 33% IN COUNTRIES WHERE THE 2ND YEAR MORTALITY RATE IS ALREADY LESS THAN 12 PER 1000.

Target
date

2. PROGRAMME TARGETS

ENVIRONMENTAL HEALTH SERVICES

- | | | |
|--------|---|------------|
| 1.1. | TO REDUCE BY HALF THE PERCENTAGE OF DWELLINGS WHICH DO NOT YET HAVE WATER CONNECTIONS IN THE HOME, OR AT LEAST A SHARED FACILITY IN THE "YARD". | 1980 |
| 1.1.1. | Adopt the WHO "International Standards for Drinking Water", or the U.S. Standards. | 1977 |
| 1.1.2. | Develop and implement a staged programme for water quality control. | begin 1975 |
| 1.1.3. | Develop and implement emergency procedures for when positive bacteriological results obtained. | 1976 |
| 1.1.4. | Chlorinate all piped water supplies. | 1980 |
| 1.2. | REDUCE TO ZERO THE NUMBER OF DWELLINGS WITHOUT AN APPROVED SYSTEM OF SEWAGE DISPOSAL. | 1980 |
| 1.3. | ESTABLISH IN 90% OF ALL TOWNS OF MORE THAN 10,000 POPULATION A SATISFACTORY SYSTEM FOR SOLID WASTE. | 1980 |
| 1.3.1. | Mount educational campaigns on solid waste disposal in rural areas. | begin 1975 |

MATERNAL AND CHILD HEALTH SERVICES

- | | | |
|--------|---|------|
| 2.1. | 90% OF CHILDREN UNDER TWO TO ATTEND THE CHILD HEALTH CLINIC AT SUITABLE REGULAR INTERVALS. | 1980 |
| 2.1.1. | Review number and siting of clinic sessions in relation to population distribution. | 1976 |
| 2.1.2. | Ensure that name, age and address of every child under two in the defined health district is known to the staff of the clinic, and have a system to indicate non-attenders and defaulters. Introduce Notification of Birth legislation. | 1976 |
| 2.1.3. | Implement a visiting system for non-attenders and defaulters. | |

		<u>Target date</u>
2.1.4.	Employ auxiliaries and/or volunteers to assist at clinic sessions and in home visiting.	1976
2.1.5.	Reduce the waiting time and improve accommodation for mothers and infants at clinic sessions.	1975
2.1.6.	Encourage attendance by having available a suitable infant weaning food at a price within reach of all mothers.	1977
2.1.7.	Introduce legislation requiring that all children be immunized with triple (DPT), oral polio, BCG and measles vaccines before school entry.	1976
2.1.8.	Pay special attention to the cultivation and expression of appropriate attitudes by clinic staff towards mothers of children.	1975
2.1.9.	Assess and regularly monitor "coverage", viz (a) proportion of eligible children in a district ever attending clinic; (b) the proportion of actual attendances made over "expected" attendances. For the latter figure a target of 60% is suggested.	1980
2.1.10.	Encourage formation of Community Health Associations.	1976
2.2.1.	ALL CHILDREN UNDER TWO ATTENDING CHILD HEALTH CLINICS TO HAVE THEIR WEIGHTS CHARTED ON WEIGHT CHARTS. ALL CLINICS AND HOSPITALS TO BE EQUIPPED WITH BEAM BALANCE INFANT SCALES.	1 Jan. '76
2.2.2.	At-risk criteria to be defined, communicated to health staff.	1977
2.2.3.	Public health nurse to be notified whenever a child for her district is admitted to hospital and when discharged. Hospital to have a list of the dates, times and places of all child health clinics in its area and to give to mother on discharge of child appointment letter for next child health clinic in her district.	1975
2.2.4.	All orphanages and "places-of-safety" should be inspected regularly and annually licenced. An excessive prevalence of protein-calorie malnutrition should be cause for refusal of a licence.	1975

		<u>Target date</u>
2.2.5.	<i>The same provisions of inspection and licensing should apply to day-care centres, nurseries and child minders, with criteria limited to hygienic surroundings and care and adequate feeding.</i>	1976
2.3.	EACH GOVERNMENT SHOULD DESIGNATE ONE PERSON, OR A SMALL GROUP OF PERSONS, WHOSE DUTY WOULD BE IMPLEMENTATION OF THESE IMPROVEMENTS IN THE MCH SERVICE AND OF THIS STRATEGY AND PLAN OF ACTION IN GENERAL.	1974
2.4.	IN MATTERS OF PROMOTIONS, TRANSFERS OR OTHER REDEPLOYMENT OF STAFF, DUE CONSIDERATION TO BE GIVEN TO THEIR MAXIMUM UTILIZATION IN THESE ASPECTS OF CHILD HEALTH.	

IMMUNIZATION

3.1.	OFFERED TO ALL INFANTS A SCHEDULE OF COMPREHENSIVE IMMUNIZATION COMPRISING THE FOLLOWING:	
a)	THREE DOSES OF TRIPLE VACCINE (DPT) PLUS A BOOSTER DOSE ONE YEAR AFTER THE 3RD DOSE;	1975
b)	THREE DOSES OF ORAL POLIO VACCINE, PLUS A BOOSTER DOSE WITH THE BOOSTER DPT;	1975
c)	BCG AT BIRTH OR AT ANY TIME DURING THE FIRST YEAR;	1975
d)	LIVE ATTENUATED MEASLES VACCINE AT AGE NOT LESS THAN NINE MONTHS AND PREFERABLY BEFORE 15 MONTHS.	1976
3.2.	INTRODUCE LEGISLATION FOR EVERY CHILD TO BE COMPREHENSIVELY IMMUNIZED AS A PRE-REQUISITE OF ADMISSION TO ANY SCHOOL.	1976
3.3.	ESTABLISH A TARGET AIMING AT THE COMPLETION OF COMPREHENSIVE IMMUNIZATION BY 80 PERCENT OF THESE CHILDREN BY THE AGE OF TWO YEARS.	1977
3.3.1.	Provide the necessary number of syringes, needles and sterilizers.	1975
3.3.2.	Ensure that vaccines do not frequently run out of stock at clinics and never at the central level.	

		<u>Target date</u>
3.3.3.	<i>Provide refrigeration facilities for all clinics, and cold boxes for "out-station" clinic sessions.</i>	1975
3.3.4.	<i>Keep a record of immunization both at the clinic and by the parent</i>	
3.3.5.	<i>Generate at each clinic session a record of what immunizations performed, not numbers only. Records to be periodically summated and forwarded to the district and central level.</i>	1975

BREAST-FEEDING

4.1.	DOUBLE THE PERCENTAGE OF WOMEN FEEDING THEIR BABY SOLELY ON THE BREAST AT THREE MONTHS.	1980
4.1.1.	<i>Equip all medical and nursing personnel with modern knowledge of the psycho-physiology of lactation.</i>	1976
4.1.2.	<i>Mount a deliberate campaign to promote lactation by education for schoolgirls and at antenatal clinics and by mass media.</i>	1975
4.1.3.	<i>Persuade or compel all the companies to adopt a code of ethical practice in advertising of powdered milks for infants.</i>	1975
4.1.4.	<i>Use the Guidelines to Young Child Feeding in the Contemporary Caribbean as a norm of practice in government health services.</i>	
4.1.5.	<i>Introduce measures to facilitate lactation in the working mother.</i>	

FAMILY PLANNING AND ANTENATAL CARE

5.1.	GOVERNMENTS WHICH HAVE NOT ALREADY DONE SO TO FORMULATE A POSITIVE POLICY AND PROGRAMME ON FAMILY PLANNING.	1975
5.2.	ADVICE AND ASSISTANCE WITH CONTRACEPTION TO BE AVAILABLE AT ALL GOVERNMENT HOSPITALS, HEALTH CENTRES AND CLINICS.	1976

Target
date

- 5.3. ALL MINISTRIES OF HEALTH TO EXPLORE GIVING TRAINING AND ASSISTANCE TO NANAS, SO AS TO INCORPORATE THEM INTO THE HEALTH SERVICES IN ROLE ANCILLARY TO THE REGULAR MIDWIFERY SERVICE.

1975

MANAGEMENT AND FOLLOW-UP OF GASTRO-ENTERITIS AND MALNUTRITION

- 6.1. MINISTRIES OF HEALTH TO UNDERTAKE A SYSTEMATIC REAPPRAISAL OF THE METHODS OF MANAGEMENT AND FOLLOW-UP OF GASTRO-ENTERITIS AND PCM BOTH IN HOSPITALS AND CLINICS.

31 Dec. '75

- 6.1.1. *Provide the UOI manuals being published on in-patient treatment to responsible staff, hold short seminars on the subject, and make the procedures outlined therein the normal procedures of the service.*

1975-6

- 6.1.2. *Provide adequate equipment for intravenous rehydration in all hospitals receiving sick children and certain health centres, and material for oral rehydration at all health centres.*

1976

- 6.1.3. *All children under 5 years admitted to hospital for whatever reason should be weighed on admission and periodically throughout their stay, and their weight charted.*

1975

- 6.1.4. *Every child admitted to hospital with gastro-enteritis and pcm should be followed up regularly at its Child Health Clinic until the age of 2½ years.*

1975

- 6.1.5. *Ensure completely adequate facilities for maintaining proper hygiene in nursing the child with gastro-enteritis.*

1975

- 6.1.6. *One medical record clerk to be provided for every 50 children's hospital beds.*

1975

DATA NECESSARY FOR IMPLEMENTATION

- 7.1. GASTRO-ENTERITIS AND SEVERE MALNUTRITION TO BE MADE SPECIALLY REPORTABLE DISEASES.

1975

Target
date

- 7.2. CENTRAL STATISTICAL OFFICES TO BE REQUIRED AND ENABLED TO INITIATE AND MAINTAIN UP-TO-DATE A SPECIAL ACCOUNT OF DEATHS OF CHILDREN UNDER 5 YEARS OF AGE, AND TO PRODUCE ANNUAL MORTALITY RATES FOR THE FOLLOWING AGE GROUPS: BIRTH TO 28 DAYS; 1-5 MONTHS; 6-11 MONTHS; 12-23 MONTHS; 24-35 MONTHS; 36-47 MONTHS; 48-59 MONTHS. 1975
- 7.3. ALL WARDS RECEIVING YOUNG CHILDREN TO KEEP AN ADMISSION REGISTER FOR THESE CHILDREN.
- 7.4. INTRODUCE CONTINUOUS SURVEILLANCE SYSTEM OF NUTRITIONAL STATUS BASED ON CHILD HEALTH CLINIC RECORDS. 1977

HEALTH EDUCATION, NUTRITION EDUCATION, CONSUMER EDUCATION

- 8.1. THE MINISTERS OF EDUCATION TO MAKE A SPECIAL EFFORT TO BRING A SATISFACTORY SYLLABUS CONCERNING FAMILY LIFE EDUCATION INTO UNIVERSAL USE IN THEIR COUNTRY. September 1976
- 8.1.1. *The Health Educator or other responsible authority in the Ministry of Health to meet with the officers responsible for the curriculum in the Ministry of Education and begin drawing up such a syllabus, for all children, adjusted to age.* 1974
- 8.1.2. *This type of education to be included in the curriculum of Teacher Training Colleges and in-service courses for existing teachers.* 1975
- 8.1.3. *Materials with which to teach this subject to be provided to schools.* 1975
- 8.2.1. *Governments themselves to become very actively involved in consumer education.* 1975
- 8.2.2. *Governments to make greater use of the mass media for promoting good nutrition practices and wise purchase and use of food.* 1975
- 8.2.3. *Promote the training in the Caribbean of personnel at B.Sc. level in Nutrition, Dietetics and Consumer Studies (Home Economics).* 1976

		<u>Target date</u>
8.2.4.	Institute voluntary or compulsory control of advertising and labelling re foods and tonics and prevent unethical and nutritionally damaging advertising.	1975
8.3.1.	Draw up schedules of lecture-demonstrations for teaching by the health staff in (a) antenatal clinics, (b) child health clinics. Instruct staff in the use of these schemes and provide them with visual aid materials and a small budget for purchase of foods for demonstrations.	1976
8.3.2.	Provide suitable visual aid material to every public health nurse for use in individual consultations.	1976
8.4.1.	Undertake a review of the content in regard to malnutrition and gastro-enteritis of the basic training courses of doctors, nurses, midwives, public health nurses, health inspectors, health educators and auxiliaries, and make suitable amendments using the Guidelines to Young Child Feeding as the basis.	1975
8.4.2.	Carry out in specific staged programmes in-service refresher courses for already-trained personnel on the prevention and management of gastro-enteritis and protein-calorie malnutrition.	begin in 1974

ECONOMICS AND AGRICULTURAL MEASURES

9.1.	MINISTRY OF HEALTH TO BE ENABLED TO PURCHASE AT A NEGOTIATED CONTRACT PRICE, FROM A FOOD PROCESSOR WITHIN THE AREA, ADEQUATE QUANTITIES OF AN INFANT WEANING FOOD MADE UP ACCORDING TO THE MINISTRY'S OWN SPECIFICATIONS.	1 Jan. '77
9.1.1.	This food should be sold at clinics at a price within the reach of low-income mothers.	
9.1.2.	The quantities of this subsidized food made available to the individual family to be related to the child's "at-risk" or nutritional status.	
9.2.	EVERY COUNTRY IN THE AREA TO HAVE A NATIONAL FOOD AND NUTRITION POLICY IN COURSE OF IMPLEMENTATION.	1 Jan. '78

Target
date

- 9.3. EACH MINISTRY OF HEALTH TO UNDERTAKE SPECIFIC CONSULTATIONS WITH THE MINISTRIES OF AGRICULTURE AND TRADE CONCERNING THE FUTURE AVAILABILITY OF BASIC NUTRITIONALLY-NECESSARY FOODSTUFFS AT PRICES WITHIN THE REACH OF ALL THE POPULATION.

by 31 Dec.
1974

SOCIO-CULTURAL ASPECTS

- 10.1.1. To mount campaigns through the mass media concerning paternal responsibility.

1975

- 10.1.2. Where necessary to amend legislation and/or current practice in order to facilitate the process of the obtaining of paternal financial support.

1975

- 10.1.3. To review current and draft-social legislation and national insurance regulations with a view to seeing that the interests of mother and child are adequately protected.

1974

TECHNICAL GROUP MEETING ON MALNUTRITION AND GASTRO-ENTERITIS
(St. Vincent, 8-11 January 1974)

LIST OF PARTICIPANTS

ANTIGUA

Mrs. O. Challenger
Public Health Nurse
Superintendent

BAHAMAS

Dr. G. Davis
Chief Medical Officer

BARBADOS

Dr. F. Ramsey
Paediatrician

Dr. A. C. Graham
Paediatrician

Miss M. Bowen
Health Sister

DOMINICA

Dr. E. Armour
Paediatrician

GRENADA

Dr. L. Comissiong
Chief Medical Officer

GUYANA

Dr. C. Harry
Maternal and Child
Health Officer

Mrs. E. Hall
Chief Public Health Nurse

JAMAICA

Miss H. Fox
Nutritionist

Dr. C. Moody
Medical Officer of Health

Dr. K. McKenzie
Paediatrician

ST. KITTS

Dr. M. L. Hodge
Paediatrician

ST. LUCIA

Dr. E. G. A. Bernez
Medical Officer of Health

ST. VINCENT

Dr. C. A. Mulrairie
Senior Medical Officer

Dr. G. Cordice
Medical Officer of Health

Dr. V. Usborne
Paediatrician

Mr. J. Saunders
Public Health Superintendent

Miss Belle Allen
Nutrition Officer

Mrs. S. McKie
Public Health Nursing
Superintendent

TRINIDAD

Dr. M. McDowell
Paediatrician

Dr. A. Santiago
Epidemiologist

Miss W. Raymond
Nursing Instructor (PH)

COMMONWEALTH CARIBBEAN SECRETARIAT

Dr. P. Boyd
Executive Secretary (Health)

Miss M. Harding
Nursing Officer

UNIVERSITY OF THE WEST INDIES

Professor C. Miller
Department of Paediatrics

Dr. D. Picou
Director, TMRU

Professor K. Standard
Department of Social and
Preventive Medicine

Mrs. I. McGhie
Health Educator

PAHO/WHO (Zone I)

Dr. Colm O'Colmain
Country Representative
Trinidad and Tobago

Dr. P. Severyns
Adviser, MCH, FP

Dr. D. Wilson
Nutrition Adviser

PAHO/WHO (Zone I) cont'd

Mr. S. Barnes
Health Education Adviser

Dr. H. J. P. Diggory
Country Representative
Jamaica.

Dr. I. Gogan
Country Representative
Barbados

Mr. R. A. Chinchilla
Engineer

Dr. M. Williams
Scientist, TRVL

Miss C. Witter
Public Health Nutritionist

Dr. P. Chaves
Adviser, Health Planning

CFNI

Dr. R. Cook
Director

Dr. J. A. Campbell
Deputy Director

Dr. A. C. K. Antrobus
Medical Nutritionist

Dr. J. M. Gurney
Medical Nutritionist

TOPICS AND COMMENTS

WHILE WE FERTILIZE GOLF COURSES**By James P. Grant***

Over the twenty-five years since President Truman committed the United States to providing technical assistance overseas, developing countries have been urged to modernize their agriculture by use of more chemical fertilizers and the better seeds that need them.

But events of the last year, as a world fertilizer scarcity has emerged, have given that advice the appearance of a cruel trick. Many developing countries, dependent on imports for a sizable share of their fertilizer needs, have seen supplies cut off by the industrial countries at a time of acute food scarcity, endangering the food supply of millions already at the survival line.

With food prices high everywhere, raising farmers' demands in the United States and other advanced countries for already tight fertilizer supplies, major exporting regions have reduced fertilizer exports by various means. For example, the Japanese Government, faced with an energy crunch - energy is a principal raw material for fertilizer production - deliberately reduced production and sent missions to break contracts throughout Asia.

Through an agreement between the fertilizer industry and the Cost of Living Council to increase supplies in this country, the United States discouraged new export contracts during most of the 1974 crop year, which ended June 30, and used the threat of further price controls to keep supplies at home.

Shipments of fertilizer under the United States aid program also virtually dried up. The ensuing fertilizer shortage in many developing countries, which is now being felt, was the principal reason for the seven million ton shortfall in India's wheat harvest this spring.

The United Nations Food and Agriculture Organization recently estimated the fertilizer shortfall in the developing countries for the crop year beginning this summer to be two million tons. This will probably mean a loss in grain production of twenty million tons, enough to sustain one hundred million Asians or Africans for a year.

Diminishing returns from increased applications of fertilizer are complicating the problem and spotlighting the irrationality of the current pattern of fertilizer distribution. Advanced farmers in the industrial countries, who already apply nutrients liberally, get only limited production gains from each additional pound of fertilizer used - often only five pounds or less of extra grain.

**This article first appeared in the New York Times of 28 August 1974.*

***Mr. Grant is president of the Overseas Development Council, a private organization concerned with underdeveloped countries and their relationship to the developed world.*



By contrast, most farmers in poor countries are using much less fertilizer and an extra pound of nutrient can easily yield ten to twelve pounds more of grain.

The current global distribution pattern, then, is keeping the most fertilizer where it will produce the least amount of extra food. World food production this year will be millions of tons lower than it could have been if available fertilizer had been distributed more rationally and equitably among the poor countries.

For every dollar's worth of nutrient the poor countries are denied this year, they will likely have to import five dollars' worth of food next year. This is a losing proposition that these countries - many of which are already at the economic breaking-point - can ill-afford.

Nor does the pattern serve the interests of the United States and other grain exporters. We are caught in an absurd cycle in which a country is refused fertilizer, thus cutting its food production and raising its import needs (and quite likely famine-relief needs) by more food than the amount we produced with the withheld fertilizer in the first place, thereby further inflating already high world grain prices. This will hurt rich and poor alike.

Or is it possible we will deny the poor countries, where per capita grain consumption is only one-fifth of ours, the food as well? Last year, when the United States earned two billion dollars more on its food exports to developing countries through higher prices than it did in the previous year, we reduced our food aid to forty percent of the 1972 fiscal year level, and about one-half of this reduced amount went to Indochina.

Meanwhile, as the world is caught in a critical shortage of fertilizer for food production, and as we restrict our exports of fertilizer and food, Americans are applying some three million tons of nutrients to lawns, gardens, cemeteries and golf courses - more than used by all the farmers in India, and half again as much as the current shortage in developing countries.

A sense of priority and some active leadership is badly needed from the executive branch of our Government. It should follow the call by numerous Senators and Representatives early this year for a Presidential appeal to the American people to reduce non-essential uses of fertilizer, just as we were asked to turn down our thermostats and slow down our cars.

Such action could free enough fertilizer over the coming year to alleviate the more severe shortages, which, in any case, will beset us for most of this decade. The Government should also restore fertilizer-aid shipments to sizable levels and encourage private business to sell more to the poor countries. The time is short and the stakes are high.

THE BREAST-FEEDING CAMPAIGN IN TRINIDAD AND TOBAGO

by

*Alison White**

During the months of June and July, mothers, fathers, children, grannies, civil servants, limers, business men, even visitors to Trinidad and Tobago, must have seen, read or heard that 'every baby deserves the breast'.

Background

In January 1974, the Association of Advertising Agencies (AAA) offered their services to the Housewives Association of Trinidad and Tobago (HATT) to promote consumer education. Since much of our previous efforts have been directed toward nutrition education we proposed that we start with this aspect of the programme. The decision to make breast feeding the priority was taken on advice from Dr. Byam, Ministry of Health and Miss Zephirin, Miss Foster and Dr. Antrobus of CFNI.

The Housewives Association of Trinidad and Tobago (HATT) submitted details of breast feeding in a 'brief' to the Association of Advertising Agencies (AAA) in March, outlining:-

1. The *situation* as it exists in Trinidad and Tobago:
 - that breast feeding is on the decline
 - that there is an increased incidence of PCM
 - that there is a high level of deaths from gastro-enteritis
 - that undoubtedly milk is fast becoming a luxury item on the world market.
2. The *problem* - to get mothers to breast feed their babies.

*Alison White is Vice President of the Housewives Association of Trinidad and Tobago (HATT), 143 Eastern Main Road, St. Augustine, Trinidad.



every
baby
deserves
the
breast

Suddenly, we in the Caribbean have virtually stopped breast feeding our babies. It seems that the bottle is better than the breast. This is a mistake. The fact is: All experts agree that mother's milk is better and far, far superior to anything you can buy in the grocery or supermarket. Now, we'd like to tell you why.

1. Mother's milk is made especially for baby humans, and is therefore different and better than milk made for baby cows.

2. Mother's milk supplies all the nutrients needed for the first four months of your baby's life--including water.
NB: Even when you are not adequately nourished yourself. Added to that, breast feeding gives baby confidence and security.

3. It protects baby against malnutrition.

4. It protects baby against diseases -- like diarrhoea, polio, measles. Mother's milk actually acts as a deterrent to diarrhoea which can be horrors to mothers.

5. It is readily available, cheaper and more convenient.

6. It is good for the figure because it helps the womb return to its normal size and uses up fat.

7. It helps protect mothers against breast cancer.

"This is part of the Consumers Education Programme designed and sponsored by the Housewives Association of Trinidad and Tobago, The Advertising Agencies Association of Trinidad and Tobago and the Trinidad and Tobago Publishers and Broadcasters Association."



every baby deserves the breast

3. The *facts* - we explained why breast feeding is desirable; listed the advantages; stated that obviously a mother wants the best for her baby; and that every woman produces milk in her breast after delivery. Practical considerations were also included.

We saw the campaign as being aimed first at providing mothers-to-be with facts on breast feeding so that they can make a reasoned decision to nurse their babies and secondly, to create an awareness in the whole population of the desirability of human milk.

During April we saw the artist's concept of the 'product' to be sold and how a collection of semi-scientific notes were converted into a language which would communicate to the population.

At this time, the Minister of Health pledged his ministry's support for the campaign and the Trinidad and Tobago Publishers and Broadcasters Association promised cooperation in the form of time and space on radio, television and in the press for a six-week period.

The campaign was launched on 31 May with the backing of the Ministry of Health and CFNI.

Advertising

During June and July the two daily papers, the Trinidad Guardian and Express, and the evening paper carried once, twice or three times a week, a series of five advertisements each high-lighting a different aspect of breast feeding but repeating the same basic information. Some weekly and monthly publications have also included at least one of the series. The radio stations gave us more than the promised nine 15 and 30 second 'spots' per day between them, and TTT one 10 second 'spot' per day at 'prime time'.



MALNUTRITION CAN BE CUT DOWN

"This is part of the Consumers Education Programme designed and sponsored by the Housewives Association of Trinidad and Tobago, The Advertising Agencies Association of Trinidad and Tobago and the Trinidad and Tobago Publishers and Broadcasters Association."



every baby deserves the breast

Do you know that breast feeding can cut down malnutrition.

You see, mother's milk contains all the nutrients needed for the first four months of baby's life.

In fact, even when mothers are inadequately nourished, the milk they produce is of sufficient quantity and quality in terms of protein and calories to satisfy and nourish baby. Added to that:-

- * Mother's milk is especially made for baby humans, and is therefore different and better than milk made for baby cows.

- * It protects baby against diseases -- like diarrhoea, polio and measles.

Mother's milk actually acts as a deterrent to diarrhoea which can be horrors to mothers.

- * It is readily available, cheaper and more convenient.

- * It is good for the figure because it helps the womb return to its normal size and uses up fat.

- * It helps protect mothers against breast cancer.

Supporting Programmes

1. *The media.* Early in June, HATT accepted an offer by Alfred Aguiton and Astra Da Costa, All Media Projects Ltd. (AMPLE), to coordinate the production of material for press articles, releases, radio and TV programmes. They interviewed and recorded nurses and mothers in clinics to provide material for five 15 minute Government Broadcasting Unit features. On their suggestion a film was made in one of the Health Centres. During July they were responsible for a daily 5 minute radio series which appeared simultaneously in the press. They also arranged a telephone conversation between HATT's President, Mrs. Faith Wiltshire and Mrs. Manley of Jamaica who endorsed the programme.

At least nine television programmes have focussed on breast feeding during this period: an interview on Panorama, the daily news programme; a current affairs discussion; the film of mothers and nurses in a clinic; and a series of six interviews based on the five advertisements (HATT's President, a nurse, a mother - a member of La Leche League, a home economist, a medical officer and a nutritionist).

2. *The Ministry of Health* arranged a briefing session for health office personnel, etc., so that they would have up-to-date information on breast feeding. They also printed handbills and posters and have been responsible for distribution to health centres. Ministry personnel have assisted with television and radio programmes.

YOU CAN GET YOUR FIGURE BACK TOO



During pregnancy, the womb stretches and expands to accommodate your baby. Breast-feeding helps to retract the womb and bring it back to its normal size. So breast feeding is actually a pretty marvellous way to put yourself back in shape. It is, too, the most natural way, since breast feeding uses up the fat laid down during pregnancy in readiness for lactation. That way you lose weight and get back your figure, naturally.



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every baby deserves the breast

3. *Other activities* have included:

- (i) talks and discussion with secondary school children in Port-of-Spain, San Fernando, Sangre Grande, Couva and Tobago;
- (ii) talks to other groups - e.g. PTAs, church groups, (even a group of fathers gathered together for a Father's Day function!)
- (iii) the organization by the Central Library of a collection of material on breast feeding for display in Port-of-Spain and the outlying districts served by the mobile library;
- (iv) an endorsement by the Trinidad and Tobago Medical Association and acceptance of an article on breast feeding for the Association's publication, 'MedInews'.

The Cost

- 1. The Advertising Agencies gave their professional services, time and materials.
- 2. The time and space for advertisement was donated by the respective media.
- 3. Hazel Ward donated her voice for the radio and TV 'spot'.
- 4. The Ministry of Health supplied paper and the Central Statistical Office printed the handbills. A private firm printed the posters.
- 5. HATT paid for the preparation of the 'blocks' at a special reduced rate and the AAA and HATT shared the fee payable to AMPLE.

In terms of dollars and cents, the Advertising Agencies say this exceeds far more than any individual firm is prepared to spend on a series of advertisement. It represents much time and energy spent by all the people involved.

SIX STEPS TO BREAST FEEDING WITHOUT TEARS

Almost all women
produce milk
after childbirth.

So here
are 6 easy
steps to doing
what comes
naturally:-

1. Encourage the baby to suckle as soon as it is born.
2. Establish a regular routine to suit both mother and baby— different babies have different frequencies of feeding. Fit feeding to suit both parties.
3. Milk flows better when the mother is relaxed and happy.
4. Have something to drink before feeding.
5. Wear convenient clothes and supporting brassiers.
6. Avoid introducing a bottle— it makes breast feeding less successful.

PS: Don't be anxious or doubtful.
Confidence is what counts.



every baby
deserves the breast

Evaluation

Dr. Gueri of the Trinidad Centre of CFNI has promised to be responsible for the difficult task of evaluating the campaign. The first stage is being carried out during August.

It is hoped that our efforts are justified. The population has been exposed to the message. But it remains for Dr. Gueri to assess whether it has enough impact to help halt the trend away from breast feeding.

THE MILK OF HUMAN KINDNESS

Breast feeding is actually the best thing we can do for our babies. It is in fact the best, most natural, way to start our relationship with our babies. Breast feeding gives baby confidence and a feeling of security.

Establishes a permanent, satisfying relationship between you and your baby. Added to that it provides:

*

All the nutrients needed for the baby's first four months of life -- including water.

*

It acts as a deterrent to diseases like gastro-enteritis, polio, diarrhoea and measles.

*

Protects the baby against malnutrition.

*

It helps protect mothers against breast cancer.



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every baby deserves the breast

NEWSPAPER CLIPPINGS

FARM NOW OR STARVE LATER

From the Barbados Advocate-News (editorial) 15 August 1974.

The advance notice has been given, the relevant conference has been held and the politicians are making the appropriate noises. Now do we in the West Indies buckle down immediately to the task of feeding ourselves or do we pursue unrealistic lifestyles and starve?

A regional working party comprising delegates and advisers from Barbados, Guyana, Jamaica, Grenada and Trinidad and Tobago met last week in Barbados with the specific aim of drafting proposals for a detailed plan to increase food production in the Caribbean.

As expressed by Barbados' Deputy Prime Minister, Mr. Edwy Talma, who declared the conference open: "United the Caribbean can feed its people, divided we starve and die together".

Dr. Eric Williams, Prime Minister of Trinidad and Tobago has since spelled out a plan which he put to the working party. It is that:

- Food production must be approached as a basic industry to be run on commercial lines by a corporation collectively owned by the governments of the area and making approved investments in the different territories.
- The Government of Trinidad and Tobago through its natural gas will guarantee the requirements of fertiliser made to suit Caribbean specifications.
- Transportation facilities must be established with adequate refrigeration to meet the market needs of the entire Caribbean community.
- Long term contracts by individual territories will give further assurance to consumers and producers alike.
- The project must operate where necessary, on the basis of large enterprises as distinct from the historical emphasis on small farming.
- Very special emphasis must be placed on livestock, including meat, dairy products and stock feed.
- Factory processing and modern packaging must be developed equal to the best in the outside world, and
- Similar emphasis must be placed on fish, fruits and vegetables.

The working party conference came against a background of increasing world population as well as a seriously diminishing food supply even in the most developed countries.

Rapid communications have apprised us of the plight of millions in Asia and Africa for whom the acquiring of a single meal is the major problem of their day-to-day existence.

We have been repeatedly warned that we must increase agricultural production or eventually starve. Our pattern of extremely high imports of food-stuffs is unwise in terms of economic and trading strategy. We deplete foreign exchange earnings when we could be growing food and building up reserves. In the context of the world's food situation it is downright suicidal not to grow our own food.

The history of the Caribbean area is closely tied to agriculture for the very simple fact that few of the territories possess any natural resources to develop. Guyana and Jamaica have bauxite, Trinidad has petroleum, but even these cannot be expected to provide all the revenue for a sound and prosperous economy.

The economic fortunes of the individual units of the area are closely bound to agriculture and the fluctuations of their prosperity and adversity can be traced like a graph of the success or failure of farming.

The earliest colonists survived through agriculture. The absentee landlords made their high living through farming, the plantocrats held their grip on the peasantry through farming. The political upheavals were triggered because the lives of the people became unbearable as a result of policies tied to farming.

Even now that industrialisation and tourism have been added as avenues of revenue they only succeed insofar as farming succeeds alongside them. For workers must eat and scarce items of food and high prices rob them of the benefits of employment in industry.

And where is the sense of getting in millions of dollars of revenue through tourism and spending it on massive imports of basic foodstuffs which we can grow on our own soil?

Respected technocrats such as Mr. William Demas have almost unceasingly maintained that any real industrial or economic development in the Caribbean area must be based on efficient agricultural production. We have the unrealistically wasteful fact of fruit rotting on the ground in some of our islands while they import juices and preserves of the same kinds of fruits. Some units in the area pay high prices for fruit and vegetables which one can hardly give away in other islands.

Pilot projects have demonstrated that high quality produce can be grown in these islands. Better yields, healthier strains, new techniques have been developed. Technology, finance and marketing have been improved. The pressing necessity has been emphasised and a plan has been revealed.

We must now get down to the task of making the plan work - and quickly, for manna will not drop from heaven to feed us if we neglect to plant seeds and nurture the plants to fruition. Crops take time to grow so start the agricultural production drive immediately. Cut the talk. Get on with the growing.

PM's FOOD PLAN UNDER FIRE AGAIN

From the Trinidad Express, 29 August 1974.

The Prime Minister's proposed Caribbean food plan has come in for some heavy blows from three political organisations, two of them in Trinidad and one in St. Vincent.

The Democratic Action Congress (DAC) and Tapia of Trinidad and Tobago have expressed scepticism about the plan and the St. Vincent Labour Party has called it part of a plan by the 'big four' of CARICOM to dominate the region's economy.

The early August issue of DAC's organ, 'Truth' attacks Dr. Williams as being the "puppet" of the multi-national corporations in the food business of the Caribbean. The article states that the plan cannot stand up when it is known that Trinidad and Tobago is importing \$150 million in food every year, and has been "ignored and neglected for the past eighteen years."

"In spite of plan after plan the farmers are still land hungry, fertiliser hungry, electricity hungry, marketing hungry, irrigation thirsty in the dry season and waterlogged in the wet season", says the DAC.

Calling the plan a "sellout to big business", the DAC asks "will it be a case of the smaller so-called Less Developed Countries (LDCs) continuing to be the economic colonies of the More Developed Countries."

'Truth' goes on to state that food processing at the level of small co-operatives is the answer to the problem of ensuring supplies of food all year round while keeping money where it is needed - in farmers' pockets.

Yesterday, Mr. Dennis Pantin, public relations officer of Tapia, commented that "it is confusing to see the Prime Minister announcing a food plan for the West Indies while there is no food plan for Trinidad and Tobago".

Gimmick

He felt that the food plan had only 'announce-value', and was probably only an election gimmick. Government has not taken agriculture seriously in Trinidad and Tobago, reminded Mr. Pantin, and agricultural production has not been increasing. Tapia noted that no moves had been taken to assist the local agricultural sector, and that, for example, farmers were not taking the rice plan seriously.

The Vincent 'Star', organ of the Labour Party in the island, has asked what role the Less Developed Countries (LDCs) will play in the plan. The 'Star' reports that Trinidad, Jamaica, Barbados and Guyana plan to dominate commercial corporation which will operate the regional food production plan of the CARICOM area.

CFNI NEWS

NEW STAFF MEMBERS

Dr. Curtis McIntosh, a Grenadian, joined CFNI on August 1st as Technical Officer (Research) at the Trinidad Centre. Married, with one daughter, Dr. McIntosh was formerly Research Fellow in the Department of Agricultural Economics at UWI, St. Augustine, a position he has held since obtaining his Ph.D. from the University of Alberta in 1972. After graduation from UWI in 1965 with a B.Sc. in Agriculture, Dr. McIntosh worked for one year with the Winban (Windward Island Banana Growers Association) Scheme, then went on to the University of Alberta to pursue studies leading to the M.Sc. which he obtained in 1968. His thesis for the M.Sc. was: "A statistical analysis of cattle prices on terminal and auction markets in Alberta" and for the Ph.D.: "The demand for meat and dairy products in Canada with projections to 1980". While at CFNI Dr. McIntosh is engaged in a project to monitor food prices and in the analysis and prediction of food prices throughout the Region.

Mrs. Andrea Okwesa. We welcome Mrs. Andrea Okwesa (nee Lampart) to the staff of the Jamaica Centre of CFNI as media officer/editor. Mrs. Okwesa has been away from her native Jamaica for nine years, most recently in London where she was media resources officer at the Commonwealth Institute. She obtained her BA (Hons.) degree in English from UWI in 1964, then pursued studies leading to a post-graduate degree in Library and Information Science from the University of Toronto in 1967. After graduation, Mrs. Okwesa was employed by the Toronto Board of Education and also did research for the Study of Educational Facilities on the design of educational facilities in primary and secondary schools. After a year in Europe, she worked in London with the BBC and attended a number of courses in audiovisual media and methods and resources centre design and organization at the National Audiovisual Aids Centre.

Mrs. Okwesa will supervise the operations of a new Productions Unit at CFNI. This work will involve the production of materials and their presentation in various forms suited to different audiences. She will act as sub-editor of 'Cajanus'. When the printing facilities of the Publications Unit are in operation we can expect a "new-look" 'Cajanus' professionally printed and easier to read.

VISITOR FROM BANGLADESH

Professor Kamal Ahmad, Head of the Department of Nutrition, University of Dacca, Bangladesh, visited the Mona Campus of UWI.

Professor Ahmad kindly gave a seminar on nutrition in Bangladesh. Our nutrition problems were put firmly into perspective.

Two hurricanes - Carmen and Fifi - passed by Jamaica recently and caused considerable flooding. In Bangladesh water from the Himalayan inundated one-third of the country and caused many deaths both direct and from consequent starvation and disease.

Many of our children suffer the after-effects of malnutrition. In Bangladesh many suffer no after-effects - they die.

CAJANAQUOTE

Much has been said about the low productivity of the undernourished individual. Such individuals, however, manage to produce all our grain and cotton. They produce our gorgeous silks and famous textiles, and our jewellery and our ornamental ware. They build our homes, schools, universities, hospitals, palaces and temples although they don't have homes of their own. I have yet to see any category of goods produced primarily by the well-nourished in this country except books and publications.

Nutritionists should not also forget the tremendous capacity of man for adaptation to diverse surroundings. How many of us can compete with Mahatma Gandhi or Acharya Vinoba Bhave in our levels of activity and productivity? Certainly they do not present a stereotyped picture of apathy, laziness, low productivity, mental confusion and inability to concentrate which are presented as characteristics of the under-nourished individual. Have they adapted to their frugal diet? Or have we adaptate ourselves to affluence? The poor are able to walk long distances and the rich are immobilized without transport. Who has done the adapting? Are we justified in thinking that a deviation in one direction signifies adaptation to an unsatisfactory condition whereas a deviation in the opposite direction signifies a desirable change?

Bavoda J. Nutr. (1974) 1, 5-9
A Lay Man's Views on Nutrition

BOOK REVIEWS

"A CATTa FULL OF WEST INDIAN DISHES"

By Marva Sprauve Browne and Vernon McDonald Browne. *Virgin Islands: Caribbean Crafts* (1973).

What more appropriate title could so commendable a collection of West Indian recipes have? A catta, as explained by Marva and Vernon Browne, co-authors of the book, is "a cloth tightly rolled into a circular piece for carrying a load on the head". In the Jamaican context a catta is made not only of cloth but also of dried banana leaves, grass, cane leaves, yam bush or in general, any pliable vegetable matter, green or dry which will yield to a round or oval shape.

The admixture of recipes brings the cultural heritage of a people to the limelight and combines it with that of other cultures, so relevant to harmonious living today. By so doing, however, some recipes are made typical of the Virgin Islands but not of the other West Indian islands. Traditional foods are given the status they justly deserve through novel presentations for everyday use as well as for festive occasions in homes and commercial eating-places. Not many of us would have thought of sherry accompanying the humble green pigeon (*Cajanus cajan*, congo, gungo) peas soup. Great pity however, that no home-made wines are suggested.

The organization of the text into menus for breakfast, lunch and dinner with accompanying recipes is a rare feature well worth praising. While due attention has been paid to the enrichment of some dishes by substituting milk for water, in making of quick breads for example, little thought has been given to conservative measures like short-term cooking periods, cooking peas in soaking water, not browning meats or scoring protein foods like meat or fish to facilitate the dispersion of seasoning agents, eating fresh fruits raw instead of cooking, particularly in jams and jellies, and not soaking foods (except dried peas and salty meats) for one to two hours prior to cooking. It is also somewhat disquieting to see cassava bread head the list of 'other nutritious foods'.

Professionalism in recipe writing leaves much to be desired. In only a few cases are the number of servings mentioned; where this is done they are made inconspicuous by writing words instead of numerals. Ingredients are seldom written in the order in which they are to be used and in some cases, for entire recipes actual quantities or the methodology are omitted. The reader is told to make a pastry but he is not told of what kind and what to use.

He is also told to make coconut 'milk' but no instructions are given. An alien to the region would be truly alienated when trying some of these recipes. One would expect an appendix or additional notes explaining some of these points.

The titles of recipes in some cases are misleading since the actual amounts, or type, of the ingredient after which they are named are either insignificant or even non-existent. In the cornmeal fritter, for example, the amount of flour is approximately three times that of the cornmeal. In the 'cocoa tea' recipe mention is made of baker's chocolate not cocoa powder.

Incidentally the term 'cocoa tea' seems rather colloquial. Why not just 'hot cocoa' or 'hot chocolate' thus leaving the unadulterated word 'tea' (fool-proof) as an infusion of leaves, stems, roots or peel? In another instance mention is made of 'salt meat or pork'. Isn't pork considered a type of meat? In a third case the reader is advised to 'remove the yam, leaving the skin', as if they were never components of the same item, yam.

The printers devil has left in its trail spellings and grammatical constructions like 'cocoanut' (coconut), 'pig tail' (pig's tail) and 'corn beef' (corned beef).

Pictures are few and depict people rather than foods. Lastly, I would like to have seen more tips like 'vinegar preventing an okra medley from becoming slimy'. Perhaps the revised version will carry not only 'a catta full of dishes' but more explanations of their origin, nutritional value and other useful tips.

Sadie Campbell
Scientific Research Council
Jamaica

"SUGAR APPLES ARE APPLES TOO"

By Ruth Moolenaar, Marva Sprauve Browne and Helen C. Williams. *Virgin Islands: V.I. Printing Office (1973).*

As the preface rightly states - "don't judge a book by its cover" because behind the somewhat drab cover lies a number of constructive, original innovations aimed at helping the child to appreciate the local fruits as equally, or in some cases, more nutritious than their imported counterparts. In keeping with the title, however, one would have liked to see an array of colourful, shapely apples on the cover to attract and hold the attention of the youngsters at whom the book is aimed.

In the publication, the authors have seized the opportunity of combining fun with practice in a wide variety of subjects. There is practice in art, English, mathematics, general science and nutrition, to name but a few.

The nutrition concepts in particular, are misleading - 'bananas keep us healthy'. Why bananas and not other fruits? Cherries and cashew fruit are alleged to be too tart to be eaten raw - so cooking is advocated. No consideration is given to the destruction of the major nutrient - ascorbic acid. In the case of guava, no mention is made of its nutritional value when eaten right out of the hand, or as canned fruit or juice. Jellies do come in for good measure from a taste and economic standpoint, but certainly should not be the major form in which the fruit is presented to the child.

The tenderizing effect of green papaya must surely stop once heat is applied, yet the reader gets the feeling that the tenderizing process continues throughout the heating process.

If flutes are made from the papaya stems won't this affect fruiting. Should this practice therefore be condoned? The latter question could be asked about the use of 'bush teas' for 'inducing sleep' and 'curing fevers'. As stated in the text, one gets the impression that this concept is factual precise and worth trying. What the authors might have added to allay any fears or doubts, is a caution about the use of these bushes as teas because they contain certain medicines which while useful, may be harmful in some cases.

The writing of some recipes leaves much to be desired. Items referred to in the method fail to be noted in the list of ingredients and when they are, the quantities are omitted. The number of servings or yield of a particular recipe is missing in most cases.

The calendar of the availability of fruits and vegetables should prove useful as also an integral part of the text.

Sadie Campbell
Scientific Research Council
Jamaica

HEALTH STANDARDS FOR RESTAURANTS

By the Portland Parish Council, Jamaica, 1974 (22 pages)

Commercial and communal eating places such as restaurants, present major problems in food hygiene arising mainly from the methods employed in storing, handling and cooking food. Other contributory factors may be the state of the premises and the facilities used in food preparation, as well as the kitchen staff and servers.

Because of the large numbers of people who may be affected and the serious risks involved, the principles of food hygiene in restaurants need to be applied with particular care, and areas needing most attention include the source and condition of the food which is to be prepared and served, the spread of bacteria and methods of proper storage.

Health authorities, increasingly aware of the inadequate facilities of many establishments engaged in handling food, should consider as an integral part of their duties, instruction on various aspects of food sanitation to deal with the kinds of problems which may arise as a result of negligence. This manual "Health Standards for Restaurants" is a serious attempt to get to the roots of the problem by presenting detailed guidelines for those either interested in establishing a restaurant, or actively engaged in running one, in which case it provokes enquiry into standards already maintained by presenting a number of constructive alternatives.

"Restaurants" are classified according to type, into different categories, namely, those in a residential setting such as in hotels or guest-houses, smaller less well-organized establishments catering to a different sector of the public such as snack-bars or cook-shops, and the usual type of eating establishment serving the general public.

The handbook is a comprehensive and useful tool for those seeking pertinent information on the subject, not only in the parish for which it is intended but also other parishes in the island. It is capable of even wider application beyond the region, since the standards laid down are universal in their relevance to proper methods of food hygiene.

The manual is classified under various headings, viz. (A) Structure; (B) Equipment; and (C) Food and Food Storage. This, in addition to facilitating easy reference, isolates the areas which should come under close scrutiny by those engaged in improving existing standards or establishing new ones. Each section is further sub-divided into a number of sub-sections and the "Criteria for Satisfaction" in column 2 are summarised by the use of a simple key-word or phrase in column 1 - "Requirement". An added feature which should enhance the handbook's value is a third column, left blank for the inclusion of notes by the user.

In general this publication should promote improved standards in the area of restaurant management, as well as give perspective to planners and those concerned with the teaching of hygiene at all levels of community life.

Andrea Okwesa
Caribbean Food and Nutrition Institute
Jamaica.

EDITORIAL

NO MAN IS AN ISLAND

The World Food Conference will be over by the time you receive this issue of 'Cajanus'. We will have some indications of the answer to the question: "will the politicians let the world starve?" (the title of the article on page 235). The perpetual tragedy of Bangladesh and the Sahel divides the world as surely and more profoundly than do differing political ideologies. It is hard for most of us in the Caribbean to really comprehend the extent of suffering others have to endure until death.

We can, or should, comprehend what inadequate diets are doing to many of our children's development and our adults' efficiency (page 245) and for everyone's serenity. Clearly we must continue to redistribute our resources so as to minimise these problems. We must resist the coca-colonization of our societies and come to welcome a certain amount of austerity as "a permanent component of genuine humanism" (page 226).

Lastly, the rich. Can the rich countries, and the rich within our societies, forego a little luxury, give a little more and pay a little more? The world is quite a small sphere. We are all "involved in mankind" now as never before, as events of the past few years have shown. It's not really the politicians who may let the world starve; it is the people by a failure to "connect" and to feel a oneness with others far away.

THE EDITOR

TOPICS AND COMMENTS

THE RECENT HISTORY OF BREASTFEEDING IN THE USA*

By J. M. Gurney

In 1965 a national cross-sectional survey of US married couples was carried out - the National Fertility Survey. 4,918 married women who had had at least one child and were living with their husbands were interviewed about whether they breastfed their firstborn infants. The data provide information on breastfeeding between 1926 (when the older women in the survey had their first child) and 1965. The results do not include anything on the duration of breastfeeding or on supplementary or replacement feeding. They simply give the proportion of babies that were put to the breast.

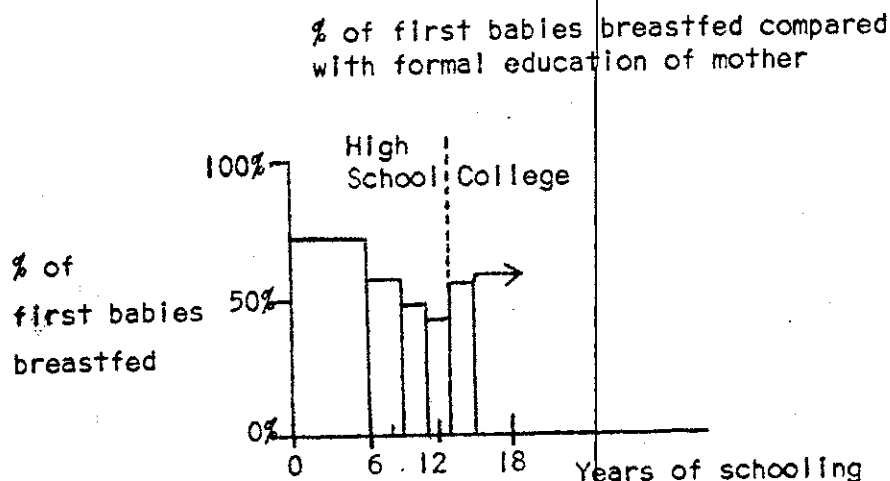
About three out of four first babies were breastfed before 1940 and less than one in three in the period 1961-1965. There has been a clear decline over the years. At any time younger mothers were more likely to breastfeed than were older mothers (remember that the study only considered first babies). No resurgence of breastfeeding was found. We all await with interest the findings of the 1970 National Fertility Survey to see if, perhaps as part of the fashion for 'natural' foods breastfeeding is showing a comeback.

On average fifty percent of mothers breastfed their first baby. Only twenty-seven percent of Jewish mothers did so and only forty-four percent of Roman Catholic mothers (these differences are statistically significant). The ranking, by origin of the mother's mother, was as follows, Afro-American (58%), Latin-American (56%), English (53%), German (51%), Slavic (46%), Irish (45%), French (42%), and Italian (38%). By religion the ranking was other/none (57%, about half of these were Mormon), Protestant (53%), Roman Catholic (44%), and Jewish (27%).

Sixty-four percent of farm mothers breastfed their first child as compared with forty-nine percent of non-farm mothers. This difference applied in all regions of the USA. Only thirty-nine percent of non-farm mothers living in the North-east breastfed and sixty-nine percent of Southern farm mothers did so. These two factors - growing up on a farm and coming from the Southern states account for the higher proportion of Afro-American mothers than other groups who breastfed their first baby.

The figure overleaf demonstrates that poorly educated mothers have been those most likely to breastfeed their first child, followed by college educated, high school graduates breastfeeding the least. This pattern was the same for both

*This information is abstracted from an article entitled 'Social Background and Breastfeeding among American Mothers' by C. Hirschman and J.A. Sweet in *Social Biology*, Vol. 21 (1974) page 39-57. Should any reader like to have a photocopy of the original article please write to the editor of 'Cajanus'.



Afro-American and European-American mothers. The decline in breastfeeding over the years has affected mainly women in the middle educational category. Among women born between 1911 and 1915 there was hardly any educational differential in breastfeeding. These results suggest that bottle-feeding in the USA is not a custom that first became popular among the upper middle class and spread down.

It should be re-emphasised that these findings derive only from firstborn babies and do not take any account of the duration of breastfeeding or the time of first giving babies other foods. The historical pattern in the USA may or may not have relevance to other areas; it is however interesting and in some respects surprising, and raises questions that are appropriate to us all.

THREE CRUCIAL QUESTIONS*

By Denis Goulet

The economic and political patterns which prevail in media industries suggest three questions of crucial importance to developed and underdeveloped societies alike.

The first deals with the relative primacy to be accorded technology or politics. Each society will have to engage in its own version of the famous Chinese struggle between the demands of "Red versus expert". The issue is this: should political and social values fix criteria for controlling technology, or should the dictates of technological efficiency be obeyed uncritically.

*This is taken from the conclusions of the article "The Political Economy of the Image Industries", published in *Newstatements*, 2 (1973), 8-14. If any reader would like a copy of the complete article please write to the Editor of 'Cajanus'.

A second issue is the possibility of choosing between a consumer model of development and one which advocates a generalized practice of austerity, no longer viewed as a necessary evil in the early phases of capital formation but as a permanent component of genuine humanism.

Thirdly, one is led to ask, what kind of world order is necessary to render authentic development possible? In such a world will technological resources have to be pooled? If so, how?

THE AGENT, THE HOST AND THE ENVIRONMENT*

By Nevin S. Srimshaw

Sometimes an infectious agent is so virulent and so contagious that it appears to cause disease independently of host factors, but this is rare. Nutritional disease can only be understood in terms of the classic epidemiological triad of agent, host, and environment. For example, iron deficiency anaemia is obviously related to the intake of iron, but the basis for its occurrence is multiple and cannot be predicted accurately from a knowledge of iron intake. It depends on the extent to which:

- (1) The iron is in absorbable form;
- (2) Its absorption is impaired by other factors in the diet, or by gastrointestinal pathology;
- (3) Iron needs are increased by physiological factors such as menstruation, pregnancy, and lactation, or pathological ones such as gastrointestinal blood loss from hookworm infection or other causes. The amount of iron in the diet will, in turn, be influenced by a variety of social factors.

Nutritional diseases should be viewed as the result not only of a specific nutrient deficiency or imbalance, but also of factors influencing physiological availability, and those associated with age, sex, genetic background, physiological state, and pathological characteristics of the host. The occurrence of nutritional disease is largely influenced by biological, social and physical characteristics of the environment.

These factors may affect the need of the host for a particular nutrient, as in the case of iron, or determine the nutrient's availability through food that must be harvested, caught, bartered, or purchased. Frequently, the

*Taken from "Myths and Realities in International Health Planning", Amer. J. Publ. Health, 64, 792. (The editor of 'Cajanus' will send gladly a copy of the complete article to any 'Cajanus' reader who requests one).

principal determinant of nutritional disease is in the social environment, particularly dietary beliefs and practices and economic status, affecting the actual consumption of nutrients either in food, or perhaps in some other form such as a pill, capsule, or tonic.

In practical nutrition terms, the myth of the agent as a satisfactory explanation for the occurrence of disease finds expression in the concept that because a missing nutrient is the cause of most nutritional deficiency disease, the way to prevent it is to supply food. The inadequacy of this approach is illustrated by the general failure of food distribution programmes intended to reach the preschool child and prevent protein-calorie malnutrition (PCM). An extreme example was the high prevalence of the clinically severe forms of PCM, kwashiorkor and marasmus, among the Bangladesh refugees in India in 1971, despite the distribution of adequate rations to the families. The young children living in the overcrowded and unsanitary conditions of the camps had almost constant diarrhoeal and respiratory disease, which was managed by the traditional withdrawing of solid foods and the giving of barley water. The establishment of feeding centres to distribute milk or protein-rich vegetable gruels to young children had virtually no detectable effect on the frequency of nutritional disease because children were not brought to these centres for such food when they had fever or diarrhoea. The problem was not one of supplying food, but of assuring that the child actually consumed it.

The usual programmes for feeding the preschool child in developing countries do little better. In the first place, the problem is concentrated in the children four months to twenty-four months of age, when breast milk is increasingly inadequate as a sole source of protein. In most developing countries, the supplementary feeding provided to older breastfed infants is grossly inadequate; yet the mother does not have time to bring the baby she is nursing into a distribution centre every day, nor does she think it necessary. After weaning, when she might delegate an older child to bring the younger one to the feeding centre, the period of greatest need is generally past.

Giving the mother food to take home for the child is no more effective, because in the first place she feels she must share it with at least the other children, if not the entire family. Thus, the quantity reaching the target child is usually too little to be effective. Moreover, when a child is sick with fever or diarrhoea, or passes worms, which often occurs at this age, the mother feels it quite wrong to give protein foods to the young child.

What is needed is re-thinking of the best way to approach this problem. I have become convinced that any effective programme to prevent PCM in the preschool child must be based on regular contact with the family in the home. Apart from exceptional cases, only this can prevent the development of PCM in the first place and avoid the need for remedial supplementary feeding.

I can illustrate from personal experience the relative potential of improved nutrition and medical care to reduce morbidity and mortality among preschool children. In three villages in the Guatemalan highlands with infant mortality rates of about 100 per 1,000 and one to four year old death rates of over 40 per 1,000 we introduced, for five years, a feeding programme in one village, a medical programme in a second, and merely observed the third. All had a very high prevalence of diarrhoeal and respiratory disease. The

supplementary feeding was only a protein-rich beverage given once a day, five days a week, and less than forty percent of the children consumed the supplement on more than half of the possible number of days. Nevertheless, both morbidity and mortality rates fell sharply and there were no deaths from measles in participating children, although measles occurred as frequently as before and continued to have high case fatality rates in surrounding villages.

In the second village we tried to demonstrate the benefits of medical care provided in a manner far exceeding the most sanguine hopes of the health department to institute in any village using its own resources. For 120 families we provided a fully trained public health nurse and an experienced physician full time, together with all of the medicines and vaccines they requested (except measles vaccine, which was not then available), a full-time sanitarian to supervise the building of sanitary privies for every house, and a safe central water supply. Diarrhoea was treated alternatively with a sulfo-namide, an antibiotic, or both. Yet there was no detectable effect on morbidity of preschool children and very little on mortality, although over the five-year period several lives undoubtedly were saved in cases of bronchopneumonia or severe dehydration associated with diarrhoea. None of the medical measures introduced increased host resistance or interrupted the contact spread of diarrhoeal and respiratory disease.

Much evidence has accumulated to indicate that the excess postneonatal mortality among young children in developing countries, as compared with industrialized ones, is almost entirely the result of the synergistic interaction of malnutrition and infection and simply does not occur if the children are well nourished. While improvement in food supplies, rather than in hygiene or the advent of miracle drugs, was probably the primary factor in the population explosion, it does not follow that it will soon be checked by increased food shortages. This is another myth.

A NOTE ON REQUIRED LEGUME RESEARCH*

By the Protein Advisory Group of the United Nations (PAG)

With recent improvements in productivity of wheat and rice, and to some extent maize, pearl millet and sorghum, there are reasonable hopes that the demand for calories can be more or less satisfied. The prospects of meeting the demand for protein are, however, less bright unless concerted action is initiated. The economics of the plant-animal-man food chain is, for many developing countries, quite unfavourable. While the population is expanding and is expected to double in the next few decades, the limits of increasing land under cultivation have been nearly reached. Greater reliance, therefore, must be placed on the direct chain from plant to man.

*Document prepared at the 21st Protein Advisory Group of the United Nations (PAG) Meeting, New York, 4-8 June 1973. Taken from PAG Bulletin, Vol. III, No. 4 (1973).

Pulses, which are the dried seeds of some leguminous genera, will have to play an important role in meeting the protein needs of these countries. Fortunately, dry legumes have been popular in the diets of the people and acceptability will not be a problem. Pulses also possess other advantages:

- (a) they make a substantial contribution to energy needs;
- (b) they contain two to three times as much protein as do the cereals;
- (c) perhaps most importantly the amino acid profile of pulses complements that of cereal proteins so that a diet containing proteins from the two sources can satisfy man's requirements for the essential amino acids.

Since legumes have the capacity to fix atmospheric nitrogen symbiotically, pulses form an important component of a productive farming system. Pulses are also known to improve the crumb structure and moisture retention of the soil.

Ironically, the very success which attended efforts for improved productivity of cereals has adversely affected pulse production in countries like India and made it subject to wide fluctuation. When land comes under irrigation, pulses give way to high-yielding cereals and are pushed into more marginal lands. While this may have been partly due to the concern of the government for increasing cereal production, there is no denying the greater economic returns obtained from the new varieties of cereals, especially wheat. Any attempt at increasing pulse production will succeed only if their productivity is increased so that they are more competitive, vis-a-vis cereals, than now.

Increasing the genetic potential for seed yield

The fundamental reason for cultivating any crop is to exploit its ability to capture radiant energy and convert a high proportion of this into useful economic products; these are carbohydrates and proteins in the case of pulses. At present, we lack effective solutions to the many interrelated problems involved in obtaining a high production of them from pulse crops. It is essential, therefore, to devise ways and means of increasing considerably the genetic potential inherent in pulse varieties to capture and convert radiant energy into useful end products. The role of environmental and cultural factors in determining the extent to which these potentialities are actually realized in practice also need to be better appreciated, evaluated and controlled.

Improving photosynthetic efficiency

Physiological studies on pulse crops are rather meagre but such studies on other legumes such as soybeans, groundnuts, etc., may be relevant. These studies have clearly shown that legumes reach light saturation at a fairly low intensity. This may be a reflection of their evolutionary history since legumes probably developed in less open country than cereals. Their inability to make use of higher light intensities may also be due to the greater photorespiration in legumes as compared to cereals. However this may be, a search for greater photosynthetic efficiency and a greater capacity to utilize abundant sunlight is likely to be rewarding. The basic research needed for accomplishing this must get top priority.

A more immediate possibility would appear to be to restructure the architecture of the leguminous plant so that maximum use is made of the available sunlight. In soybeans, for example, it has been found that only the top 15-30cm of the canopy is sufficiently illuminated while the leaves deeper than this are highly shaded. A restructuring of the canopy so that a greater part of it receives sufficient energy can result in high yields. Theoretically, the maximum yields can be obtained when the most shaded leaves are at the compensation point; opening up the legume canopy by selecting for smaller, more erect leaves could, therefore, result in greater yield potential.

Improving the sink potential

The sink potential assumes importance in realizing the greater yield potential of the end product, the seeds. It is known, for example, that only twenty percent of the sugar synthesized by the plant is recovered in the seed in a moderately high-yielding crop of soybeans. A programme aimed at increasing the sink capacity may be of help in harvesting in the seeds a greater portion of the energy fixed by the plant.

One of the reasons for such low recovery may be continued vegetative growth, since most legumes are indeterminate. Reduction of vegetative dominance by breeding determinate types, closer planting, hormonal treatment, etc., could lead to a greater recovery of the photosynthetic products in the seeds. Also any reduction in flower and young pod drop, which has been estimated to be as high as seventy-five percent, could obviously increase the available sink capacity. Since random removal of flowers does not lead to any reduction in the abscission of remaining flowers, it has been suggested that competition for photosynthate may not be the major cause of such flower pod abscission. The greater shading of the inflorescences due to the closed canopy may perhaps play a major role or it may be a reflection of moisture stress caused by the continuing demands of the vegetative parts, a particularly important aspect as long as pulses are grown as dry-land crops. Considerable investigation of such flower drop appears essential.

Improving the nutrition of pulse crops

Pulses have been shown to respond to application of phosphorus (P) and potassium (K) just as other crops do when these elements are lacking in the soil. This is fortunate as both synthesis and utilization of sugars need adequate P and K. The other major element, nitrogen (N), primarily influences the utilization of the sugars. Pulses derive by far the major part of their nitrogen from symbiotically fixed nitrogen made available by the bacteria in root nodules. There is considerable evidence that application of nitrogenous compounds in earlier stages inhibits symbiotic nitrogen fixation. From the economic point-of-view also, it would appear desirable to exploit symbiotic fixation of nitrogen rather than add extraneous nitrogen fertilizers which are already in short supply. The desirability of developing more efficient symbiotic systems of legume and rhizobium thus assumes prime importance. The nitrogen required for the synthesis of protein in the seed obviously depends on the nitrogen fixation by the plant and the symbiotic association has an important role in this. The relation between the strain of *Rhizobium* and the variety of legume is known to be very specific. This relation is affected by

interaction with soil type, soil acidity, organic matter, various minerals, etc. A 60 quintal/hectare crop of pulse, for instance, would result in a harvest of about 550kg N in the plant parts, which is very much higher than the amount fixed by rhizobia. It may be possible to breed legume varieties with greater productivity potential through increased specificity of superior nodule stereotypes.

Another aspect of this problem which also needs attention is the possibility that if pulses are provided with a greater supply of nitrogen, yields could be increased. It has been suggested for instance, that the sharp drop in photosynthetic activity of pulses (noticed almost universally in legumes) with the onset of the reproductive phase could be traced to reduced N supply. Such reduction in N supply might in turn be responsible for the sloughing off of root nodules, possibly a result of competition for the reduced photosynthate pool, resulting in N availability. It may be noted that such sloughing off of nodules does not occur in tree legumes. The interesting possibility then arises that if nitrogen availability could be increased this chain of adverse events could be avoided and high yields realized. There are two possible approaches. One would be to search for genotypes of legumes and rhizobia which would permit a complementary utilization of artificial and symbiotic nitrogen. The interesting question is whether a careful scrutiny of wild germ plasm at the putative centres of origin of different legumes would reveal the existence of such genotypes of the host and/or the symbiont or alternatively, could such genotypes be produced by induced variation.

A second approach would be to discover whether nitrogen could be applied at some stage of the host-plant development without causing preferential utilization of artificial nitrogen in preference to symbiotic N or affecting the process of symbiotic N fixation. This may be a fairly complex question and may be resolved only with sophisticated experimentation. Again, whether such additional N will be reflected in increased seed yield or only induce more vegetative development which would compete with seeds as sinks for available photosynthate may need to be worked out empirically and methods for avoiding this developed.

Improving the nutritive value of pulse crops

The PAG Statement No. 22 on upgrading human nutrition through the improvement of food legumes has clearly stated the need and scope for quality improvement in pulses. The major nutritional importance of pulses lies in their protein content. An obvious approach would, therefore, be to seek to increase their protein content by selection in existing variation or induced variation. Relatively little work has been done to bring about such an increase in the protein content of pulses. However, the relatively greater success achieved in increasing the protein content of cereals and the oil content of legumes such as soybeans and groundnuts suggest that there may be a possibility of selecting for higher protein content. There is also the interesting and intriguing, if farfetched, possibility of increasing the oil content of pulse crops without any reduction in protein content. Increasing protein content by selection may not be easy, partly because of the lability of this character under environmental pressures and partly because of unfavourable correlated responses in other agronomic attributes. A selection scheme based on a wide variety of germ plasm should be able to overcome these drawbacks. Another

problem has been the nonavailability of suitable techniques to permit rapid screening of the large amount of material that would be involved. In particular, nondestructive techniques, such as NMR spectroscopy, for such estimation in single seeds need to be developed.

The quality of the protein is again of great importance. It is essential in any program of increasing pulse proteins that the amino acid profile not be disturbed in an unfavourable direction. In considering this aspect, the dietary habits of the people must be kept in mind. Where pulses are consumed with cereals and leafy vegetables, maintenance of the present amino acid profile may prove optimal. If any change is needed at all, it may be to increase lysine levels rather than methionine/cystine levels. When the available high-lysine wheats, maizes, barleys, etc., are more commonly used there may not be any need for this either. The fact that the carbon source for four essential amino acids, including methionine, is provided by aspartic acid may mean that an increase in methionine occurs at the cost of other essential amino acids. Careful thought should be given to such correlated responses, so that any genetic change does not adversely affect other beneficial nutritional constituents or increase antinutritional factors such as competitive nonessential amino acids, toxic inhibitors, etc. Constant biological monitoring of nutritional value should therefore form an integral part of all such efforts; the development of reliable and easy screening techniques for such monitoring is of obvious importance.

Since pulses have been fully accepted and used effectively as protein sources, the possibility of introducing toxic factors which are not eliminated in the usual processing appears minimal and of lower priority as long as the material concerned belongs to cultivated species. However, if and when related but differing species are introduced into the breeding program, screening for such factors may become necessary and adequate monitoring techniques will be needed.

Digestibility is another factor which may need attention. It is said that children, the group at greatest risk, can tolerate properly-cooked legumes well and that the flatulence caused is not sufficient to cause loss of appetite. However, pulses are known to differ in the extent of flatulence they cause; for example, *Phaseolus aureus* (and probably also *Vigna sinensis*) causes much less flatulence than other pulses like *Phaseolus mungo* and *Cicer arietinum*. There is evidence that the nature of the starch may be different in the *Phaseolus* species and this may be responsible for the difference in digestibility of these two pulses, rather than differences in the digestibility of protein.

Other factors which may need attention are milling and cooking quality, organoleptic characteristics, etc. Again, however, these will take a lower priority except in programs involving widely different species. The most desirable approach for the present would appear to be to develop suitable conditioning techniques.

Agronomic management and plant protection

Pulses have been traditionally grown as low-input crops and consequently selection has been for genotypes which can withstand such subsistence management. Hopefully, the approaches outlined above would result in genotypes with

high innate potential. Such potential will, however, be reflected in the harvest only if adequate inputs are provided to the pulse crops. It will also be important to protect these harvests from disease and insect pests throughout the cropping period and, particularly in the case of pulses, from storage pests, aflatoxin-producing organisms, etc. In such endeavours thought must be given to lower-cost, ecologically-acceptable control methods to complement methods of chemical control.

Collection, assessment and maintenance of germ plasm

Coordinated work by a team of specialists in various disciplines such as genetics, breeding, physiology, biochemistry, nutrition, entomology, plant pathology and others is needed to ensure success. The success of the efforts of this team of specialists will depend upon the availability of sufficient agronomic variability. Assembling, maintaining and evaluating as complete a range as possible of the germ plasm in all pulse crops will therefore be a vital necessity. Such a collection of genetic stocks is especially urgently needed in previously unsurveyed areas, especially where these are putative centres of origin or divergence. Even in areas where surveys exist, these have generally been relatively incomplete and more intensive surveys are needed. Uniform systems for recording and retrieving, relevant information on the germ plasm collected and practicable systems of maintaining it without genetic drift or loss and making it available as needed would also have to be worked out.

CAJANAQUOTE

It is no accident or coincidence that throughout history a substantial fraction of the world population has been undernourished and on the verge of starvation. In fact, the Malthusian thesis has been true and at work at all times. Population is regulated to the food supply. But thus far man has caused population to continue to increase by being able to push up the food supply. Increasing the total amount of food has done little in the long run to reduce the percentage of undernourished people. Instead, the larger the population generated by increased food supply, the greater the total number of people who live under the threat of starvation.

Jay W. Forrester
World Dynamics, pp. 27-28
Cambridge, Mass.: Wright-Allen (1971)

WILL THE POLITICIANS LET THE WORLD STARVE?*

by

William Shawcross

President Kennedy, who was rarely frightened of a bold promise, declared in 1961 that the US could not only put a man on the moon but it could also eradicate hunger from the earth. His announcement raised very false hopes.

Yet today Norman Borlaug, Nobel Prizewinner and main driving force behind the "Green Revolution", points out that still "The US is the only country that has the capacity to play a front line role in supplying deficit nations of the world with food that is indispensable for survival and a decent life".

Today the granaries, warehouses and wharves of the world contain enough food to feed us for only about three weeks - far less than at any time in the last twenty years, and hardly enough to meet, for example, a catastrophic crop failure in India or even a short-fall of the Soviet harvest on the scale of 1972. If the current food crisis is to be solved it will only be with the help of the rice farmers of Mississippi, the corn growers of Oklahoma, and the ranchers of Kansas.

The US is now the world's largest exporter of rice. Two-thirds of the world's soya bean crop is produced there and ninety percent of the world's soya bean exports. It is the world's leading supplier of wheat and feed grains; Australia and New Zealand, the only other exporters of any size, supply only a tenth of what the US puts on the market. Together with Canada the US now controls a larger share of the world's grain supplies than the Middle East does of the world's oil.

*This article first appeared in the Sunday Times (London) of 21st July 1974.

As any glance at the past twenty years of US food aid and export policies will show, Henry Kissinger was being a trifle disingenuous when he suggested last autumn that: "We had not in the past thought that agricultural exports required foreign policy decisions". Nonetheless it is true that the run down in world stocks caused by the African droughts, the unpredictable entry of China and the USSR into the world food markets, the energy crisis and the shortage of fertilisers, have opened the eyes of Wyoming and Washington to America's monopoly food power as never before.

The American attitude to the world's food problems will be crucial to the success of the World Food Conference opening in Rome in November. Last April Kissinger said: "A condition in which one billion people will suffer from malnutrition is consistent with no sense of justice". And without American help, justice will never be observed.

Rosy Road to Riches

There are two basic problems for the Conference to tackle. The first is to look at those thirty or so less developed countries who now depend on food imports for survival, and to work out how their agricultural capacity can be increased every year to keep up with their anticipated rises in population. How, in other words, can governments be encouraged and enabled to apply to their agricultural industry some of the reforms and technical advances needed?

The second problem is how to make the best of the food we already have. How can we devise a Food Bank in which the producing countries of the world can invest enough food to protect nations or even whole continents from the catastrophe which an unusually poor harvest could bring? For the past twenty years the world has had an average of about 120m tons of grain to fall back on every year; now it has only 21m. This is, without any exaggeration, perilous.

Borlaug says: "If there is a massive crop failure (in the US) in the next two

or three years, before the reserves are built up again, 100m could die from famine".

According to a United Nations estimate, between 1970 and 1985 the demand for food will grow by twenty-seven percent in the developed countries of the world and by seventy-two percent in the developing lands. The cereals deficit in the developing nations will grow from an average of 13m tons a year to 70m tons.

This increasing shortfall will in part result from the pressures of rising population and in part be the inevitable product of the past twenty years of international aid. Senator Hubert Humphrey, chairman of the Senate's Foreign Agricultural Policy Subcommittee and a dedicated advocate of liberal food aid policies and an international food reserve system, says of US aid programmes during the 1950s and early 1960s, "We were competing with the Russians to see whether we could build a steel plant faster than they could in India a cement plant in Ghana" rather than helping them control population and improve their agricultural industries.

Such policies inevitably caused urban drift and reliance on food aid rather than food production. This is one of the causes of the shortages today. The world's developing countries (without China) have half the world's agricultural land but only seventeen percent of its agricultural scientists; only eleven percent of the money spent throughout the world on agricultural research is spent in them.

Such neglect of agriculture reflected in part the belief (discarded by the mid-1960s) that industrialisation was every one's rosy road to riches. And in part they reflected the needs of American and other Western farmers.

Ever since the war the US farm industry has produced more food than Americans could consume, and the farm lobby has been strong enough to compel

successive administrations to protect it from the financial effects of over-production by buying up surpluses. And until 1972, when the shortages finally caused a reversal of policy, Washington actually paid the farmers to keep another 60m acres of cropland idle.

In 1954, the US Congress passed the Agricultural Trade Development and Assistance Act, Public Law 480. Under this programme, sometimes known as Food For Peace, the Administration was allowed to dispose of the stocks it accumulated from the farmers (usually between 100m-150m metric tons in any year) abroad. Stocks could be either sold at concessionary prices to America's allies or given as outright grants to avert famine.

This last year half of the concessionary sales went to Cambodia and Vietnam - two countries which contain rather less than one percent of the world's population. And as Robert Lewis, national secretary of the American National Farmers' Union, points out "Food For Peace has been a great deal of use to our agricultural producers and our food industry as a marketing development too". PL480, he says, created tastes in, for example, Japan, Korea and Taiwan which could later be exploited commercially. "Each got started using our Western foods through PL480". It is not, therefore, altogether surprising that US Governments have sometimes had mixed feelings about the wisdom of enlarging national agricultural industries in the developing countries.

This attitude began to change in the mid-1960s when the world first became really aware of the food crisis. In India the monsoon failed two years running and the US began shipping twenty percent of its wheat into the subcontinent. President Johnson launched the "war on hunger" and encouraged the Agency for International Development (AID) to disprove Malthus's gloomy prophecy that population would far outstrip food production. For a few years it seemed as if AID was succeeding. Despite the enormous rises in population during the

1960s the developing countries did well: over the decade per capita food production fell by rather less than one percent. In 1969 AID was able to boast to Congress that self-sufficiency in the Third World was "just around the corner".

But the corner was not turned. Today sixty percent of the developing world is still on the brink of starvation. Deaths from malnutrition are rising fast and the balmy first days of the Green Revolution tend to be unfairly dismissed as a false dawn. Nowhere is this more true than in India.

Five years ago it seemed as if India's main problems might be solved. Starting from 1964 the Green Revolution had doubled the wheat yields in the highly irrigated Punjab and by 1971 the country was almost self-sufficient in food. Since then however, the rural death rate has risen dramatically - now up to 27 per thousand in Uttar Pradesh - and the cause is malnutrition.

This is not, however, through any failure of the Green Revolution but rather because political leaders have failed to understand its meaning and its basis. The rapid rises of production in the late sixties provided Mrs. Gandhi with an illusion of security which has proved disastrously heady.

The Green Revolution is not a simple, once and for all happening. It is a continuous political and economic process requiring long term commitments and the repeated transfer of new high yielding seed, irrigation, some mechanisation, massive doses of fertiliser and, most importantly, application of skills. All of these came primarily from America.

But after the 1971 war over Bangladesh the US suspended economic aid to India and since then neither side has done much to repair the relationship. In 1966 the US gave \$877m to India; last year \$50m. In 1966 there were 236 American technicians working for the Indian Government, most of them in agriculture. Now there are nine; most of them are clerks.

The Rockefeller and Ford Foundations have now both closed down their large agricultural research programmes in India and farmers in the Punjab complain that they are quite unable to get their hands on the really high-yielding grain any more. The country's fertiliser plants are operating at only sixty-five percent efficiency. Per acre yields in the rich Ludhiana district of Punjab are down from 1.8 tons four years ago to 1.4 tons today. Instead of moving towards a position of food self-sufficiency, India now relies more than ever on imports: this year she has already got at least 2m tons of wheat from Russia.

Dr. M.S. Swaminathan, Director of the Indian Council of Agricultural Research says that with water, power, cash, credit and technical assistance India could increase food production from the present 105m tons to 220m tons in fifteen years. He admits that without US help India cannot advance its food production. Russian agricultural aid is virtually nonexistent; Moscow is giving Mrs. Gandhi a lot of help with her rocket programme.

India's problems are larger than those of most other nations, but they are much the same. In the long run malnutrition and starvation can never be eradicated by food aid, only by the prior eradication of poverty. Until poverty is removed it seems unlikely that birth control programmes will make a crucial impact upon controlling the growth of populations. India's slogans "a small family is a happy family" and "Do, ya, teen, bas!" "One or three, finish!" have proved really influential only among the urban middle classes and the rich farmers of the Punjab. Children are the only investment a poverty-stricken peasant can make. If developing countries are to be able to increase their own food productions they must break out of the vicious circle of unemployment - low food production - low productivity - high birthrate - unemployment.

For many governments this involves political and social changes, indeed revolutions, which may be impossible to finance or otherwise hard to accept. Poverty and dependence may be preferable.

The Lack of Reserves

But increasing national food production in the developing countries will provide no solution to the immediate problem posed by the way in which world stocks have been run down in the past two years. An alternative has to be found to the buffer provided for the past twenty years by the US. This will perhaps be the main problem facing the food conference in November.

The idea of food reserves stems back at least to Confucius who devised for China the concept of the "constantly normal granary". The main problems with reserves have always been who should hold them, who should pay for them, and how to persuade farmers that they will not at some stage be dumped on the market, and ruin their livelihood. The main proposal for the world larder now comes from Dr. A.H. Boerma, Director of FAO, who has suggested a system by which individual countries adopt domestic stockpiling policies which will combine to make up an agreed international security level, and which allows - by a method yet to be devised - developing countries to draw on those reserves when necessary. One problem is that such a system would require Russia's co-operation. Till now she has behaved with almost total irresponsibility in the world food market; refusing, unlike China, to join FAO or to publish her own carryover figures thereby giving the rest of the world an idea of her likely demands.

Another suggestion for a reserve system comes from Dr. Timothy Josling of the London School of Economics. He advocates an internationally controlled reserve which would initially be paid for by the richer countries. Recipient

nations would be asked to pay for their own storage and transportation costs.

A complaint sometimes heard in the US is that few European countries now use a good harvest to build up their stocks. Instead they just cut back on their American imports. This causes yet another fluctuation in the expectations of US farmers, one for which they are not grateful. One way of offsetting it, which may be suggested at the FAO conference, would be for an importer or exporter to add to stocks when his output exceeded, perhaps, the average of the past three or four years, and draw from them when it fell below.

Such agreement to share in the problems of stockholding is probably the minimum the US will demand of its rich partners. Without some sort of arrangement under which America is persuaded to store rather than sell at least part of its agricultural produce, the developing nations cannot be insured against famine, the richer countries against food shortages.

But even if the countries attending the food conference were to agree in principle to set up a Food Bank to tide the world over the next few years, the problem would be to find the grain to put into the bank. Although harvests throughout the world are expected to be good this year (and at record levels in the US) almost all of what is produced will be consumed with little over to replenish stocks.

Dr. Lester Brown, a fellow of the Overseas Development Council in Washington and the Cassandra of world food supplies, suggests that the only way in the short term to replenish stocks and in the long term to redress the balance between grain consumption in rich and poor countries, is for the rich to change their eating habits.

The average American eats a ton of grain a year - but only 150 lb. directly; he consumes the rest indirectly in the grain-costly form of milk, eggs or meat. Beef production is an enormously wasteful use of grain supplies.

But it is hard to think of this, or perhaps any other US president suggesting to the American people that they should stop growing and eating beef and turn to wheatcakes, to help prevent famine in the Sahel. Last year, when he imposed the sudden and, for countries such as Japan, severely disruptive curb on soya bean exports, President Nixon declared: "I have made this basic decision. In allocating the products of America's farms between markets abroad and those in the US, we must put the American consumer first".

Perhaps the most comprehensive programme to assure world food security has been proposed by Senator Hubert Humphrey. He points out that: "used wisely, America's food power can be a force for enlightened and compassionate ends. Used only for narrow, short-term advantage it becomes a precious resource squandered in the face of great human suffering". He suggests that:

- Food aid must be expanded. The US, together with Canada and Australia should make \$3 billion-worth of food available to less-developed countries at concessionary prices over the next three years.
- A food reserve programme, organised to assure fair prices to farmers, must be established. Stocks would be held both publicly and privately, and released on to the market only in times of short supply.
- Fertiliser production must be expanded and exports from the US increased.
- Agricultural production in the food deficit countries must be increased.

Last year Dr. Kissinger, who previously had denied any real interest in trade or economics, was jolted by Japan's very negative reaction to the soya bean embargo. When he proposed the World Food Conference it was more out of concern for his foreign policies than for food supplies *per se*.

Recently, however, US opposition to food aid and reserves appears to have been softening - perhaps out of the realisation that although the majority of the world's commodities are controlled by the rich countries, thirty-eight

percent of them are in the hands of the poor nations, and that commodity trade is, therefore, at least to some extent a two-way street. In terms of pure self-interest it would be foolish of the US to refuse to use its food "powers" to alleviate the risks of famine. And as Hubert Humphrey picturesquely puts it: "In the final analysis a fundamental moral choice cannot be evaded. Can a nation whose nutritionists proclaim obesity to be a leading health problem share its bountiful food resources with those whose very existence is at stake?" The issue is, as Willi Brandt told the United Nations, that "morally it makes no difference whether a man is killed in war or condemned to starve to death by the indifference of others."

CAJANAQUOTE

"The three million tons of fertilizer Americans put on lawns and the like would more than cover South Asia's whole fertilizer deficit. If Americans ate one less hamburger a week, the grain 'saved' would amount in a year to ten million tons, roughly enough to feed a subsistence diet to fifty million people."

*The Washington Post
11 May, 1974.*

FOOD, NUTRITION AND PEOPLE*

by

A. C. K. Antrobus**

Why is it that we are nearly all so very concerned about the rapid increase in the world's population? Any why is there still so much lingering apprehension and timidity over the enunciation of fully developed, clear-cut policies on family planning in so many countries?

Have a close look at these questions. Whatever the reasons may be for the latter situation and however complex the answers, the former question underlines the existence of a problem and an urgent one at that. Whether on a global or a family basis our concern is really about the problems that result from there being too many people, i.e., principally the economic, social and educational problems attendant on overpopulation, and about our fears, or rather, our realization that somehow we will not be able to cope adequately because the balance between people and resources will be increasingly tilted against us - the people, and the primary resource about which we are all very intimately concerned is food.

I am sure no one is unaware of the fact that while I am referring to the future, already we are seeing in the Caribbean some evidence of this grossly unbalanced equation - and by world standards we are by no means the worst off. In some countries one side of the people-food equation hardly exists (while the other side is weighed down by people and more people - living, aborning

**This paper is based on a talk given on 14 October 1974 during Nutrition Week at Manchioneal, Jamaica.*

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and dying). Just think of recent events in Ethiopia and Bangladesh and you get some idea of what I mean.

All this may seem surprising in a world of such advanced technology and rapidly increasing knowledge - a world in which "a man on the moon" is not merely the expression of a child's imagination, and a dead man's heart can beat on and give new life to another man's body. Many exciting advances have also been made in food and nutrition. The genetic experts have not only solved major problems related to plant disease but have virtually "invented" new plants with the capacity for higher and more useful yields of important nutrients. Even petroleum - which we tend to think of only as fuel for our cars and machines - has been identified as a source of protein for human consumption.

Clearly, the relationship between the two sides of this people/food equation is far from simple. And indeed the facts and forces which operate to make the two sides unequal are themselves varied and complex - some obvious and easily explained, others ill-understood and of a more conjectural nature. The Caribbean countries belong to what is variously called the Developing World or the Third World. What we mean is they are poor countries. They are poor because there isn't enough of anything but sunshine and fresh air (and even that is being polluted by industrial advances in our pursuit of "a better life"). There isn't enough money, not enough jobs, not enough houses, and not enough food.

Our Food Dilemma

To concentrate on food for a moment, have you stopped to think where our food comes from? Maybe most of us are in a better position to make a good answer to this question than we were, say two years ago, if only because the food shortages of the last eighteen months or so have made us focus our attention on subjects like this that were previously of little real concern to us.

When we examine this question we soon realise what a grossly inadequate contribution we have been making towards feeding ourselves. And an even closer look will indicate how stupendous a challenge countries like these must face in the national undertakings to attempt to feed ourselves. Yet there is clearly no option open to such countries other than to work towards maximum food production within the framework of overall national development.

In terms of food, then, the Caribbean countries are very dependent. Everyday everybody eats bread or biscuits, dumplings or cakes, made from wheat flour - every ounce of which has to be imported. In fact, Food Balance Sheets for 1972 show that ninety-five percent of the cereals eaten in Jamaica is imported, as are nearly ninety percent of the fish and almost half of all meats. Jamaica depends also on overseas sources for more than one-third of all of the oils and fats consumed, and for one-third of our milk and milk products. On the other hand there is self-sufficiency in the starchy root crops, all of which is locally produced. Vegetables, fruits, eggs, sugar and alcohols we also manage to produce for ourselves with very little import assistance.

It should not be difficult, therefore, to see what our food dilemma is and what some of its causes are. By the same token, we should be able to arrive at some plausible methods of solving these aspects of the dilemma that are most urgent. We may not be able to grow wheat and oats, but we can certainly grow more corn and, at least, some rice. And yields of other foods such as root crops, vegetables and fruits may also be increased to meet demands both at home and abroad. Granted, all of these measures are in no way as simple as one states, but it is the suggested direction that is important.

Many of these and similar measures apply in one form or another to the large plantation, as well as to the small farm. But we must not forget the householder with the "half-square" garden patch. Whether it be calaloo, and

escallion, sweet peppers or corn he can come onto the production scene as an important "extra", since every little something produced by him helps both his own domestic cause and pushes forward the total national endeavour. Thus there is an enormous amount of room for expansion in the food production business, and, as in all other enterprises, it must be stressed that there is also considerable scope for increased efficiency through greater productivity.

Maybe as bad as or worse than under-production is under-use of existing wealth and produce. Nowhere is such under-use more evident than in the case of human milk - a superior, quality-controlled commodity existing in an, ever-ready, self-regulatory market. Breast milk is being grossly under-used, leaving a potential supply of vast amounts of calories, protein, minerals and vitamins untapped, even when it is there for the sucking. Maybe this should all come under the aegis of the Ministry of Mining and Natural Resources so that some fresh incentives and imaginative measures for the exploitation of this vital and precious resource might be effectively implemented.

Another facet of this ever growing food dilemma is the percentage of our incomes that is spent on food alone. The facts are that the less one earns, the higher the proportion of income that is used for food. Thus, while persons in the upper and middle income brackets may spend up to forty percent of their incomes on food, the lower income groups spend as much as seventy percent or eighty percent on the bare essentials which, obviously cannot include such semi-luxuries as the better-off people may choose to indulge in. So whatever applies with regard to self-help to combat the serious inflationary trends and food problems facing us is of the greatest critical importance to the lowest economic group who have least control over the events that determine food availability and food prices. That is why the kitchen garden or backyard garden must continue to be promoted. Not only has it direct advantages to its owner but it

has the virtue of being a very worthwhile example to other people in the community.

Eating For Survival

When we speak about food in this way we are not in the realm of eating for pleasure; we are much closer to the plebeian plane of eating for survival but, thankfully, still a few stages removed from the dungeons of starvation. All evidence points to the fact that there are large sections of the population whose food intake falls far short of their requirements for normal growth, development and functioning.

No sector of the population is more vulnerable than the young children under-five. It is a pity that so much of what they fail to get is denied them out of ignorance of what foods are best for them, out of failure to take advantage of the services available to those responsible for them - services like child welfare and antenatal clinics and family planning services; and, sadly, sometimes out of negligence or indifference on the part of a frustrated or spiritless mother.

At the other end of the age scale are the elderly. They too suffer their share of poor nutrition. This does not mean that all those in-between infancy and old age are adequately nourished. It only means that they can hustle more and, consequently, cope rather better; but, for the very reason that they are in the most active phase of their lives when the output from brain and brawn is most intense and energy-consuming, the nutritional needs of these groups must be proportionately high, and any significant shortfall they experience, must, of necessity, impair their efficiency.

A good example from this intermediate age group is the schoolchild. Just think of the demands made on his mental and physical energy in the course of a day, especially those children who live in the rural areas - early rising,

morning chores that probably include fetching water, and looking after animals, a walk to school - maybe a quarter mile and often much more; then comes class-work over a six-hour period, and this may include other forms of physical exertion - perhaps cleaning the schoolyard or some work in the garden; afterwards the return journey home and some evening chores at home, not forgetting that there may be homework set by the teacher. Add to all this what the child does voluntarily - all the frolic and fun of outdoor games and horse play. It must be clear that the abundance of energy that a child requires to see him adequately through any one day has to be met from one source only, that is his food. And we know that a fair percentage of our schoolchildren are underweight largely because their daily food intake does not always measure up to their very considerable needs for growth, work and play.

What is true for the schoolchild, is, in many respects, true for many of our adult population. But, at whatever level of the population we are looking, we recognise that man has the amazing capacity for adaptation. In the context of nutrition and energy we mean that if the intake of food is low we will usually adjust our output to match this. When this is not done, and intake and output are not nicely balanced over a period of time, then one of two things happens - we lose weight or we gain weight. When these reach extreme proportions the result is either malnutrition or obesity.

Our aim should be to find the optimum level at which we can successfully maintain this process of adaptation. Such a state can only be realised through greater and better yields of food from the land, the rivers and the sea and a resultant increase in the availability of food in a manner that takes into account the special needs of the more vulnerable sections of the population

There are, therefore, many very good reasons why we need to pay attention to matters relating to our food and nutrition. At one level, it is in the interest of the national economy and total national development; at another, it is for the sake of the household or the family who must do their best to promote the physical and mental well-being of all members within the means of the family; and at a third level, the individual must seek to derive for himself the best that he can from his environment and, at the same time, be both willing and competent to contribute to that very source from which he hopes to secure that better life.

CAJANAQUOTE

I recall a flight I made to Paris and back to Manila on the occasion of the VIIIth International Conference on Health Education. I was told by the stewardess that the plastic spoons, forks, knives, and cups and saucers are thrown away after being used once. What a waste of resources! Since there were at least one hundred passengers and we had five meals in each of which we were given ten pieces of plastic spoons, forks, knives, trays and cups, which must have numbered 5,000 altogether, if collected they would have been more than sufficient to equip twenty pre-school classes (twenty-five children per class). I saved all the fifty pieces that were given to me for our pre-school training centre in Urdaneta. I also saved all the food that I could not eat - bread, biscuits, crackers, pieces of meat or fish, including a piece of steak - and gave the same to my dogs and cats, which liked it very much! What I saved would be sufficient for one meal of a small piglet or for ten meals for one chicken. This being so, the total left-over food in the plane during the single trip would be sufficient to feed one hundred small piglets once or fifty piglets twice, or a much larger number of chickens.

CHILDHOOD MORTALITY IN THE AMERICAS*

To the people of developing countries in particular, children are their most important resource - the rising generation that must be given every opportunity to grow up strong and mentally alert. In the Americas, young people under fifteen years of age make up some forty to fifty percent of the population in most countries, and mothers and children together comprise over sixty percent of the total.

One of the most important health goals in the Charter of Punta del Este, signed by the Governments of the Americas in 1961, was to halve death rates for children under five years of age within a decade. Despite the progress made since then, the accomplishment has been far below that hoped for, particularly in the case of children aged up to one year.

For many years there has been a need for an ecological approach to the complex problem of infant mortality - an approach including the investigation of each and all of the factors causing or contributing to death and their analysis as a whole. Only through a multiple-cause study is it possible to measure the real magnitude of serious health problems that have remained hidden because previous studies of mortality were based only on the analysis of single causes.

A Life-Saving Research Programme

Now this much-needed information has been painstakingly gathered in a carefully devised, community-centred research project: an inquiry in depth into the reasons - biological as well as social and economic - for some 35,000 childhood and infant deaths.

*This article was originally published in *WHO Chronicle* (1974), 28, 276-282.

The investigation was set in motion by the Pan American Health Organization in 1968, with a four-year timetable that included twenty-seven months of field work. It was planned to encompass fifteen different widely separated areas in ten participating countries of the Western Hemisphere.

Apart from financial and other contributions from the countries themselves, the principal funding for the Latin American projects came from the United States Agency for International Development.

The overall goal was to provide health authorities with reliable comprehensive data that could serve as a basis for action to deal with the problems revealed and show the interrelationships of underlying and associated causes of death.

The investigation began with many assets:

- the valuable experience gained in a previous PAHO-coordinated Inter-American research project on the causes of adult mortality in highly diverse and widely separated populations;¹
- the preliminary testing, carried out in an initial pilot programme, to ensure that adequate questionnaires and procedures would be utilized;
- the great interest demonstrated by the Ministers of Health of all the countries participating in the project; and
- the cooperation of the multidisciplinary teams of professional and other workers assigned to carry out the work in each project, all of whom shared a deep interest in the health of children in the Americas.

¹ Pan American Health Organization (1967) Patterns of urban mortality - Report of the Inter-American Investigation of Mortality, Washington, D.C. (Scientific Publication No. 151).

Searching Out the Facts

As a first step, well-organized teams headed by physicians set out to gather data on the factors that might have contributed to each death. Thus information was obtained, through family visits, about the home, the surrounding environment, the parents, the practice of breastfeeding, and the health care that had been received by the deceased children.

The starting point was usually an examination of the official death certificates in each project area. Since these were often incomplete or recorded only the immediate cause of death, without mentioning contributory factors or causes, the records of hospitals, clinics, and private physicians were examined for additional information. If no medical care had been provided prior to the death, or if only unsatisfactory records were available, a visit to the family by an interviewing physician was the next step.

From the very beginning the investigators anticipated certain difficulties. They knew that they would find variations in the medical terminology used in civil registries and hospital records and that it would be difficult to obtain comparable classifications of causes of death. An intensive study was therefore carried out of the problems encountered locally in assigning and classifying causes.

An especially difficult problem was that of ensuring full coverage. For deaths that occurred soon after birth, the project staff carefully examined the clinical records of hospital obstetric wards and the "delivery books", and it soon became apparent that registration practices were often lax and inconsistent. Deaths as well as births sometimes went unregistered, or their registration was incomplete and inaccurate. In many instances, there was a hospital record indicating that a child had received some form of medical treatment,

but there was no record of the child's birth or death. All told, more than 2,000 unregistered deaths were counted in the investigation.

The local teams made use of every opportunity for person-to-person communication to further the aims of the investigation. The community cooperation enlisted was particularly noteworthy in one project, in which several mothers actually sought out the public health nurse to tell her that she had overlooked visiting them - that they too had recently lost babies and should be interviewed for details.

Investigators explored every possible avenue to collect facts about the deaths occurring in certain areas; because information (name, age, address, etc.) was difficult to obtain after burial, in one instance a project worker was stationed in the cemetery to interview the relatives of the deceased child.

In another project the principal collaborator, as the leader of each multidisciplinary team was called, suspected the existence of a clandestine cemetery somewhere in his study area because of the large number of death certificates that were missing. To his amazement he discovered that the fault lay in his own large hospital. Action was taken immediately to correct the situation; a manual on hospital procedures for the registration of births and deaths was provided, and by the second year of the project there was a satisfactory improvement in registration.

All the problems encountered in the data-gathering phase of the study served to underline the need for complete and reliable information if the results were to be of sufficiently high quality.

The investigation was planned to take place in twenty-five areas in fifteen projects - thirteen in Latin America, one in California, USA, and the other in Quebec Province, Canada - chosen so as to reflect overall health

conditions in both urban and rural areas under a wide variety of geographical conditions.

The two North American projects played a very important role in the overall study because they contributed the experience of areas where mortality has been reduced to very low levels and deaths in childhood are concentrated principally in the first few days of life. In some project areas, death rates in the second year of life were found to be fifty times higher than they were in the North American areas (Fig. 1).

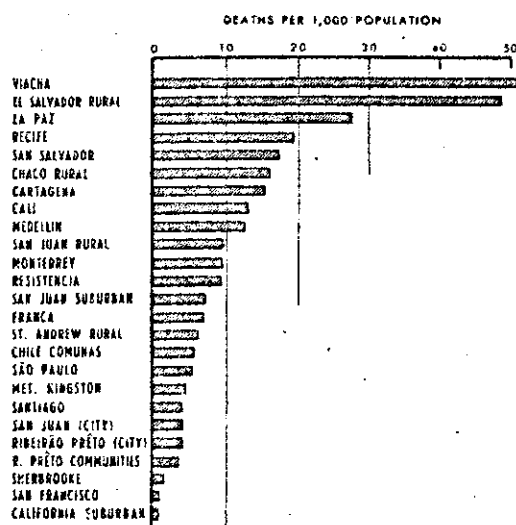


Fig. 1. Mortality of children aged 1 year from all causes in 25 areas of 15 projects

With such a broad spectrum of areas and conditions, the investigation promised to yield results that would be of value to health authorities in all parts of the Americas.

Personnel

The principal collaborators in the projects were almost all teachers from medical or public health schools, and the team members included medical teachers as well as personnel from health service agencies. As a result, the findings of the community-centred research could be incorporated without delay into medical school curricula and also into public health programmes and hospital treatment procedures.

Not counting clerical and administrative personnel, more than two hundred persons took part in collecting field data including physicians, pathologists, obstetricians, epidemiologists, paediatricians and medical interviewers. The rest were public health nurses and social workers, who frequently worked long hours to gather data from the families of deceased children and from registry offices.

The Findings

After five fruitful years of work, the data have been collected, tabulated, and carefully analysed and the findings have been published in a 490-page report.¹ The organizers of the study are satisfied that they have produced the first accurate picture of a very complex problem - a picture that will eventually be more clearly defined through similar community-centred studies in the future. Analyses are still in progress and the findings will continue to be reported.

Infectious diseases, malnutrition, and the lack of basic sanitation figure prominently among the causes of excessive mortality in childhood. So do ignorance that goes beyond illiteracy and family incomes that are too small to pay for what modern technology can offer to improve the quality of life.

¹ Pan American Health Organization (1973) *Patterns of Mortality in Childhood*, Washington, D.C. [Scientific Publication No. 262].

The health status of mothers, before and during pregnancy, cannot be overlooked as a key determinant in infant death rates, and the advisability of planning for pregnancies is clear from reproductive histories that include excessive fetal deaths and infant deaths.

The early months of infancy are particularly critical, since this is the time when a baby is most vulnerable. The investigation studied the countless factors that can interfere with the normal evolution of the process of growth and development and therefore with the ultimate health of the child. The following were the main findings. Some are startling and some were not unexpected; they all point to the need for action.

Nutritional deficiency was found to be the most important factor contributing to excessive mortality in all thirteen of the Latin American projects (Fig. 2). This condition is often linked with low weight at birth, and the two combined endanger the survival of infants and hamper the physical growth and mental development of young children.

In fifty-seven percent of the children who died before their fifth birthday, immaturity (deficient weight and development at birth) or malnutrition was present as either the underlying cause of death or an associated cause. In several areas, two-thirds of the deceased children had presented such evidence of increased susceptibility to disease.

Of the more than 35,000 deaths investigated, excluding those that were neonatal, 9.4 percent had measles as the underlying cause. Of these, sixty percent had protein-calorie malnutrition as a contributory or pre-existing cause. Only through the study of multiple causes of death could such information have come to light.

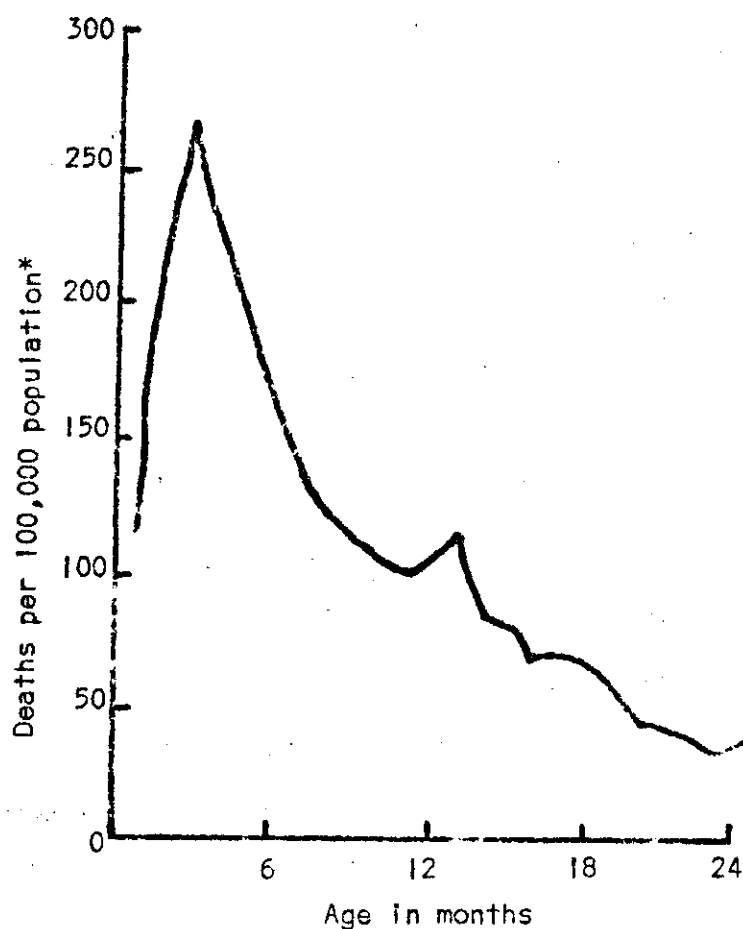


Fig. 2. Mortality from nutritional deficiency by month of age in the first two years of life, based on data from 13 Latin American projects

*Per 100,000 live births for children under 1 year of age

Low birth weight and immaturity appear to be traceable, at least in part to the poor nourishment of mothers, whose diets must be improved and increased if the vicious circle is to be broken. The very highest priority must be given to the health of mothers in order to reduce mortality among their offspring.

In addition, it was found that death rates from nutritional deficiency were higher and low weights at birth more frequent in the rural areas than in the nearby cities. For the first time it is possible to see clearly the magnitude of these problems in both the urban and the rural sectors of Latin America.

The impact of deficient nutrition, at a stage in life when infants normally grow and develop most rapidly, is important not only in terms of mortality but also - and principally - in terms of its effect on the health of the survivors.

For the first time, data on mortality from nutritional deficiency have been analysed by age at death and by type of deficiency. - the severe forms of multiple deficiencies, for example.

According to the information collected, deaths from malnutrition reach their peak as early as the third and fourth months of life. The patterns observed in the 13 projects, however, differed markedly: in 6 of them, mortality was found to be high in the first few months of life; in 6 others, it was noted that the high rates extended into the second year. In the remaining project, carried out in both urban and rural areas of El Salvador, the problem was found to be particularly serious: deaths from this cause continued to be excessive throughout the first 5 years of life.

The early onset of malnutrition points to the existence of very unfavorable conditions and the urgent need for remedial action.

As a result of the multiple-cause approach employed in the study, it has been possible to obtain valuable new information. Only by this method of investigation could the synergistic action, or interrelationship, of certain infectious diseases and malnutrition have been so clearly delineated.

At present, official mortality statistics do not show the true dimensions of many health problems. The registration of neonatal deaths, for instance, was found to be very incomplete, and there is no doubt about the scarcity of reliable information concerning the important first 28 days of life.

In the 15 projects combined, it was found that 13.2% of the neonatal deaths had not been registered. In one study area half of them had not been officially recorded, and in two others more than a quarter were missing.

Further, only slightly more than half the death certificates examined concurred with the underlying causes that the investigators established on the basis of additional clinical and pathological information compiled from hospital and autopsy records and what they learned from home interviews. For example, measles was certified as the underlying cause of only 55.4% of the deaths that the investigation has attributed to this disease.

Obviously, health planning based on such incomplete data cannot be realistic. An improvement in the completeness and quality of vital and hospital statistics, as well as in the medical certification of death, must therefore be a primary goal.

The part played by infectious diseases as underlying causes of death has been clarified. Diarrhoeal disease was found to be the most important cause, with measles second in importance. Of the 33,826 deaths studied in the Latin American projects, 14,513 had infectious diseases as underlying causes. The number of deaths from diarrhoeal disease totalled 10,037, from measles 2106.

The death rate from infectious disease was shown to be 23% higher than could have been known from official death certificates. Failure to include infectious disease on the death certificates, even when the evidence was

available from clinical records, has restricted knowledge of the size of the health problem involved in many areas.

The synergistic action of infectious disease and nutritional deficiency must also be taken into account when planning health programmes. There was evidence that infants weakened by malnutrition who recover from one infectious disease often die from another - for example, the child who, after a prolonged attack of whooping cough, acquired measles and finally died of pulmonary complications.

Thus it is of strategic importance that measures for the prevention of nutritional deficiency be properly coordinated with immunization and other measures against infectious diseases.

The study of multiple causes made it possible to measure, for the first time, the relationship between complications or abnormal conditions in the mother before and during childbirth and their effects on the child.

In the Latin American projects the neonatal death rates were found to be almost 2-3 times higher than in those in North America, which shows that, even in the critical neonatal period, the mortality can be reduced significantly.

Excessive numbers of deaths from congenital anomalies of the nervous system were discovered in El Salvador and in Monterrey, Mexico. Research into what causes an anomaly such as spina bifida is essential in order to determine whether some type of nutritional deficiency or a toxic or environmental factor is involved.

In the Sherbrooke project in Canada, in addition to spina bifida, anencephalus was found to have occurred excessively. Since some deaths from this and other defects of the nervous system occur, however, before birth

and are recorded as fetal deaths, only a limited part of this problem may have been uncovered in the study.

Marked variations in patterns of mortality were found for diseases of the nervous and respiratory systems. Malignant neoplasms, external causes, and the "sudden death syndrome" were other important underlying causes that came under scrutiny. Childhood deaths from leukaemia and other types of cancer, for instance, were more numerous than the official statistics showed, and the groundwork is being laid for investigation into the possible causes.

Child mortality in the rural areas of the projects was much higher than in the neighbouring cities. Moreover, most of the rural areas investigated were located close to urban medical centres and the findings cannot be considered typical of Latin America's large rural populations, in which mortality in childhood is probably at least twice as high as it is among city-dwellers.

The investigators found that the mothers of the deceased infants had lost many previous offspring through stillbirths, miscarriages and abortions, and early childhood deaths. In Recife and El Salvador, two projects in areas with high death rates, it was discovered that more than thirty percent of the products of earlier pregnancies had died.

Regarding birth order and its relationship to infant mortality, evidence shows that, irrespective of other factors, infants born to mothers who have had many previous pregnancies have much lower chances of survival. Not all the Latin American projects could obtain such data, but in two that did death rates were excessive in infants of fifth or higher birth orders; these were the Monterrey and Chile projects, in which the mortality rate for such infants was found to be approximately ninety per thousand live births, in contrast to about forty per thousand for first-born infants.

Prior to the investigation, breastfeeding was believed to be the usual method of feeding young babies in Latin America. Now it appears that the practice is limited in most areas, and there is a high proportion of deaths from diarrhoeal disease and nutritional deficiency among infants receiving little or no breast milk.

Data collected show that, of the infants who died in the postneonatal period, only 52.5 percent had been breastfed for one month or longer. Also, only 18.4 percent of those dying at six to eleven months of age had been breastfed for six months or longer.

This is a serious problem. Indeed, and mothers, particularly in the developing areas, should be made to realize that breastfeeding is vital for a young infant's survival.

A reverse relationship was found between infant mortality and the prenatal care of mothers, and there was great variation in the proportions of mothers of deceased infants who had received such care - from 16.9 percent to 96.7 percent. In five areas (three of them rural) less than half the mothers had received any prenatal medical attention. In contrast, there were nine areas in which more than eighty percent had made at least one visit for a checkup during the prenatal period.

As already known from other studies, the level of education of the mother is a valuable indicator of socioeconomic status and of many other variables. Since mothers with little or no education usually belong to families with a low income, poor housing, deficient water supply and sanitary facilities, and inadequate prenatal and other medical services, it is obvious that this indicator is suitable for use in future research and health planning.

In the Latin American project areas, the living conditions of certain segments of the population are probably as favourable as in highly developed countries; however, millions more people live at the greatest risk of disease and death. It is these who must be provided with at least the minimum health facilities and services.

There was great variation in the availability of piped water supplies in the areas covered by the Latin American projects. The percentage of rural homes with piped water was very low, but it was also low in several of the cities and suburban areas.

In four areas ninety percent or more of families in which neonatal deaths occurred had piped water inside the house or available from a communal facility, while in five others (two cities and three rural areas) less than a quarter had a water service available. In the thirteen Latin American cities combined nearly seventy percent of such families had piped water, but in the eight other areas less than thirty percent had that service.

Water supplies and sanitary facilities must be provided for much higher proportions of families in many urban and rural areas if there is to be any major reduction in mortality.

The enormous amount of valuable information produced by the investigation shows that coordinated community-centred research is a sound method of revealing health problems and providing the data needed for establishing effective health programmes.

When they held their meeting in 1971, the Ministers of Health of the Andean Region said:

If we really desire to invest resources effectively, we need to measure and evaluate the known problems and to uncover those that remain hidden or whose magnitude is unknown. Operations research

acquires the utmost importance, both for assessing the coverage and productivity of existing systems and for laying the bases for new designs and methods of work. To achieve this end, it is important that our countries not remain in isolation but combine their efforts for the conduct of joint research programmes . . .

One of the most important aspects of this research project is that it offers strong evidence in favour of the establishment of an overall policy, by PAHO and other international agencies, to promote and conduct - in cooperation with the countries concerned - community-centred research as an essential part of health programmes.

Recommended Action

The real measure of the investigation's success will be how its findings are utilized for taking much-needed action. The investigators made the following recommendations:

- The top priority should be given to providing mothers with adequate medical care and good nutrition. Measures to prevent low weight at birth and malnutrition in early childhood are much more effective than the care of immature infants and the lengthy treatment of malnourished children.
- Parents should be given guidance on how to attain optimal reproductive patterns with respect to the mother's age and the spacing of pregnancies. This must be considered a top priority in programmes of family health in order to safeguard the physical, mental, and emotional condition of children - and ultimately the wellbeing of societies.
- The practice of breastfeeding for a sufficient length of time should be encouraged, and adequate and suitable foods should be available for addition to the weaning child's diet. Education on nutrition and the development of community food programmes are therefore

urgently required. These are essential measures to guard against the double threat of malnutrition and infection. Maternal and child health services need to be strengthened so as to provide more intensive immunization programmes - particularly against measles. The provision of adequate and accessible water supplies is also recommended.

- Policies and alternative approaches should be developed for making health services available to the population groups at greater risk, particular attention being given to rural or isolated communities located far from urban health facilities.

Education in the Health Sciences

Because personnel from schools of public health, medicine, and other health-related sciences made highly significant contributions to the work of the investigation, the experts recommend the continued participation of such institutions in future community-centred research. Closer working relationships between universities - which are valuable instruments of change - and the health agencies are advised. Here the following action is suggested:

- Students of the health sciences should, as part of their training, become familiar with the various problems of health in the community, and conversely the staffs and facilities of community health services should be involved in all stages of university research projects.
- New, active methods should be developed for teaching the disciplines related to maternal and child health. Coordination of the teaching of obstetrics, paediatrics, and social sciences in undergraduate and postgraduate courses is imperative.

Health Data and Statistics

The geographical study of diseases calls for ample and comparable basic data from different areas. In the Americas a vast amount of information

is required as each area has special characteristics that must be taken into account in order to obtain complete and comparable information on the epidemiology and, in particular, the causation of disease.

Experience gained during the investigation suggested:

- The need to record the outcome of each pregnancy in as much detail as possible. The data should include the condition of the newborn, birth weight, signs of life, and the distribution of all live births by age and parity of mothers.
- The need for physicians, obstetricians, and paediatricians, as well as hospital administrators, midwives, nurses, and others attending births, to know and use the WHO definitions of live birth and fetal death.
- The need for the complete recording of clinical information and the correct medical certification of causes of death, including statements on both underlying and contributory causes. Such data are essential for the analysis of multiple causes.

Epidemiological Research

In addition to shedding light on the problems of malnutrition and immaturity, the investigation has provided an overall picture of other major community health problems, some of which need clarification. More research into the causes and epidemiology of diseases is required, and this must be stressed in medical education programmes.

If different types of localities are included in future geographical studies of disease, the analysis of their varied characteristics may result in unexpected findings. For example, pinpointing the geographical distribution and frequency of congenital anomalies is an important first step in the search for causes of these serious and often fatal conditions. The same is

true of studies on other morbid conditions such as malignant diseases. For instance, more children died from cancer than was known from official statistics, and leukaemias accounted for half of these deaths... Does the frequency of minor anomalies have any relationship to these malignancies? Could there be an environmental factor? Clues may be found in the chain of events leading to the appearance of certain malignant neoplasms.

The investigation has clarified the complex causes of perinatal mortality, but still more detailed information is needed on the multiple causes of deaths occurring in the first month of life.

In almost all areas imaginative operational research programmes and new approaches are needed. Also, further probing into the roles of the host, the specific agent, and the environment - together with an assessment of how the many factors involved are interrelated - would contribute greatly to the advancement of epidemiology, and consequently to improved health conditions everywhere.

NEWSPAPER CLIPPINGS

AGRICULTURE (Editorial)

From the Jamaica Daily News, 24 September 1974

Our report yesterday of a poor grain harvest in the United States, and the ominous implications for those countries in the world who depend on the output of the US grain belt for provisions of staples, is a further reminder of the dangers Jamaica faces while lagging in developing its agricultural production.

The argument here is not one of dependency on outside sources of food, for as long as we need food such as wheat and rice - and there is some argument as to whether we really need the latter - we will have to look to outside sources as there are several and varied factors which may work against us achieving substantial productive capabilities here.

It remains that despite the many efforts which are being put into improving the island's agriculture, we stand in great need of an extensive programme of agricultural revival.

While the country has toyed with many and generous incentive schemes for the development of manufacturing industries, those for the agricultural industry, except in rare cases with traditional crops, have not been so generous.

There has also been some laxity in changing the patterns of land ownership which have not been conducive to improving agricultural output, and the continuous down grading of the "small farmer" - a label which itself is unfair and does not inspire effort - to the category of one who produces either for his own subsistence or for local markets.

Project Land Lease has to some extent made an effort to change this situation, but all this stands to be defeated by a lack of organisation in handling the output of the island's farmers.

With the establishing of an organisation such as the Agricultural Marketing Corporation, we would have thought a serious examination would have been made of means by which products of farmers are collected and marketed. Yet, many Thursday and Friday nights we are still to see dangerously overloaded trucks heading from farming areas to markets in our towns - a system not in the best interest of preserving the quality of the produce, and giving farmers maximum returns.

The entire agricultural process needs to be overhauled from the planting of seeds to the disposal of the produce in the markets.

There is also still a mental attitude to agriculture which is not only detrimental to whatever plans there are for achieving agricultural self-sufficiency, but which also contribute to the social and economic problems created in urban centres by the influx of thousands who continually leave the agricultural communities.

The country can take a leaf out of the book of those young men who are now involved in developing the Nyerere Community Farm in eastern Hanover. If things go according to plan, the entire Farm of one hundred and fifty families on seven thousand acres will not only become self-sufficient in food, but will also be in a position to market surpluses in other parts of the island.

This is microcosmic of what we hope the country's agricultural position will be soon. It is a hope which can be defeated if there are not still greater efforts to develop agriculture with an input of more public funds - not only as incentives to farmers but for better marketing arrangements and prices for their products.

We should not have to depend on the failure of crops in other countries, and starvation here, to remind us of what we should be doing for ourselves.

SIX PROJECTS TO BOOST FOOD PRODUCTION IN TRINIDAD AND TOBAGO *From the Trinidad Guardian, 3 August 1974*

In an attempt to stimulate food production locally, the co-ordinating committee of the Food Development Fund has identified six major projects:

- the cultivation of one thousand acres of corn and soya at an estimated cost of \$430,000 near the Plarco Roundabout and in the Centeno area;
- the improvement of one hundred and forty acres in Tobago at an estimated cost of \$180,000 for exclusive vegetable production;
- the development of a rabbit stock by purchasing an initial stock of two hundred and sixty rabbits (two hundred and twenty young does and forty bucks) at an estimated cost of \$20,500;
- development of the La Compensation Irrigation Scheme at an estimated cost of \$110,000;
- the purchasing of essential equipment by the Central Marketing Agency for greater efficiency in the purchasing and handling of agricultural produce at an estimated cost of \$198,308; and,
- the provision of two thousand tons of cold storage facilities for the new Wholesale Fish Market at Sea Lots at an estimated cost of \$1,610,812.

Mr. Patrick Manning, Parliamentary Secretary associated with the National Planning Commission and Chairman of the Co-ordinating Committee of

the Food Development Fund, revealed these details at a Press Conference at the Conference Room, Whitehall, Port-of-Spain, recently.

Work has begun on the first two projects - corn and soya bean as well as improvement works in Tobago.

The corn and soya project is an extension of the Chaguaramas Agricultural Development Programme.

Corn will be grown from May-September and soya bean from October-February. Mr. Manning explained that this project aims at demonstrating to farmers the profitability of growing these two crops.

The second project involves vegetable production on one hundred and forty acres of land at the Old Government Stock Farm, Scarborough and Goldsborough River Basin, in Tobago.

The third project seeks to make available to the consumer a source of protein at competitive prices through the re-introduction of rabbits.

Mr. Manning explained that four-month-old rabbits will be purchased in the initial stages. These are expected to reproduce six months later and every three months thereafter.

BARBADOS APPLIED NUTRITION PROGRAMME'S ACTIVITIES EXPANDING *From the Barbados Advocate News, 1 July 1974*

The activities of the Applied Nutrition Programme in Barbados are continuing to expand, and there are now sixteen ANP groups in various parts of the Island.

The groups are at Rockfield and Half Moon Fort, St. Lucy; All Saints, the Whim, Indian Ground, Speightstown, and Black Bess, St. Peter; Chalky Mount, St. Andrew; Bagatelle, St. Thomas; Gall Hill, St. John; Ellerton, St. George, Ellerslie, St. Michael; St. Mark's, Ebenezer, and Princess Margaret, St. Philip; and St. David's, Christ Church.

According to a spokesman for the ANP, the programme is an inter-related activity undertaken by agricultural, health, and educational personnel, and other interested agencies with an overall objective of improving the standard of nutrition and good health of all Barbadians.

The ANP spokesman said that the programme in Barbados came about as a result of a basic agreement which was signed in 1970 by the Prime Minister and the International agencies UNICEF, WHO, and FAO. To ensure a co-ordinated programme, therefore, the Ministries of Health, Education and Community Development, and Agriculture, are committed, said the spokesman.

He said that once the food and nutrition problems were identified, solving them took place through educating the population to change knowledge, habits and attitudes.

The ANP spokesman added: "This can only be achieved through full and active participation of members of the community. The Applied Nutrition Programme is therefore ultimately a people's programme, and its success or failure depends on you".

He added: "In order to succeed, it must represent an intensive effort on the part of all participants to achieve the objectives of improving the nutritional status, food standards, and good health of the population".

The ANP spokesman urged "more Barbadians" to become involved in the programme by joining the ANP group nearest to them.

*TRINIDAD AND GUYANA SHOW THE WAY (Editorial)
From the Barbados Advocate News, 24 June 1974*

The proposed joint project involving Trinidad and Tobago and Guyana to encourage extensive cultivation of corn and soyabean on Guyanese soil can be seen as another important step in regional co-operation, akin to the recent plans for the establishment of a bauxite smelting plant in Trinidad and another later in Guyana.

The bauxite project will involve Jamaica, Guyana and Trinidad in the first stages and it is anticipated that Surinam, also a big bauxite producer in the area, will be accommodated in the venture at some stage. But while the bauxite project seemed a more natural development in the light of the new thinking that has been emerging about resource economics, this new agricultural venture might well have more far-reaching effects in what it can mean to future CARICOM development.

It is no secret that there is a world shortage of food and where other commodities are vital for its increased production, these too are in short supply or are now more costly. These two factors have combined to make the cost of food extremely high in most developing countries, and whether we want to admit it or not, this can mean hunger for many in the lower income groups. The main hope is that grain shortages will ease somewhat as coming crops are increased. But increased output will not take us completely off the hook, in that higher oil prices have a profound effect on prices in agriculture. Not only does oil prices influence the cost of fertiliser; farming itself requires fuel to drive equipment and transport the produce.

With the increased production of corn and soyabean that can come to CARICOM through the proposed Guyana venture, two ingredients, vital in the manufacture of animal feed, and an important part of the diet of our people should eventually be more easily available. West Indians consume great quantities of cornmeal and soyabean is a high protein-type food, extensively used as meal and with a high demand in the production of cooking oil.

Both from the point of view of a source of feed for livestock production and as part of the diet of our people the venture holds much promise. At the same time we will see what are now relatively vast uncultivated areas of Guyana being brought into food production. It has always been felt that Guyana with her vast uncultivated lands could do a lot more where food production is concerned. The corn-soyabean project provided an opportunity to test the feasibility of such ideas.

If we might come nearer home, thoughts of what has been proposed for Guyana recall earlier hints made about the establishment of a feed plant in Barbados, with Government backing. A few weeks ago when there was a noticable scarcity of animal feed in the island, plans about the setting up of the feed plant by the Government began to filter through but with the improvement of the availability of feed very little has been heard recently about the plans.

It is known that experts have been around looking into the matter. But on the whole all is now very quiet where that project is concerned. We do not anticipate that the plan will in any way be shelved, but by now we should have had a clear indication of what will be involved.

All this apart, the question of food costs and food production does not allow us any respite. We have to keep pushing all we can on our own behalf.

The food problem has become so acute that fears have been expressed that the massive food aids that have been forthcoming from a number of the developed nations to assist food projects in some of the developing countries will not be as easily available as before. In any case, with the sort of demands drought-stricken and famine areas in various parts of the world have been making on such aid, those who can help themselves will be expected to do so.

The sort of co-operation that Trinidad and Tobago and Guyana are showing in the corn-soyabean project could point the way to what other joint ventures can mean to further development of agriculture among the CARICOM group in a food-hungry world.

COMING TO GRIPS WITH FOOD NEEDS (Editorial)
From the Barbados Advocate News, 10 August 1974

Without much fanfare the Regional Working Party on Food Production has just concluded its two-day session. But if its start had not been heralded in the manner associated with at times less important gatherings, the results accomplished can have a far-reaching effect on the lives of all of us in the region. The challenge facing the Working Party is not by any means an easy one. Their task is to devise the necessary strategy and plans that will lead to increased food production in the area and the establishment of adequate marketing facilities to take this food to the tables of our people. It is a great challenge.

The Importance of what has to be done has become that much more imperative because of present food problems, not only within the region but also on a world scale. No longer can we postpone making vital decisions but must come to grips with our agricultural and other food problems now, for time is not on our side.

In an effort to cut down on their heavy food import bill, which causes a heavy drain of already scarce foreign exchange in most developing countries, a number of Caribbean Governments have initiated programmes, or have set up machinery to encourage greater emphasis to be placed by our people on locally produced foods. But all too often the enthusiasm for such produce is greater than the supply and our people remain embarrassed not only by high prices but also by constant shortages.

Food today is becoming an even more high-valued product because of the impact higher priced petroleum and fertilizer is having on the cost of production in agriculture. We have already been warned that the days of cheap oil have now gone. It therefore means that since some oil products are a necessary input in agriculture their costs will inevitably be reflected in food prices.

But we in the Caribbean have never really utilised to the fullest our agricultural potential. We must now aim at doing so if our people are not to join the growing army of malnourished now posing a serious problem in various parts of the world.

Joint projects

We have begun to make some headway with regional Governments sponsoring joint projects to step up the production of grain and cereal in the area. The Guyana-Trinidad and Tobago corn and soyabean project, which is to get under way in Guyana, has the potential to help us become more self-sufficient in our food production. With more and more Governments concentrating on the production of animal feed as a vital factor towards upgrading their dairy industry, both the corn and soyabean are useful ingredients. And this does not take into

consideration the high value placed on soyabean and corn as food commodities for the people themselves.

But what we have been seeing so far are little bits and pieces of projects here and there with no impression given of an overall plan involving the whole area. This is what the Working Party has the chance to do. The members will be able to think in terms of boosting food production, not just in terms of individual territories, but in the context of demand throughout the whole area.

To do this effectively might require a number of decisions not now in keeping with insular concepts but it is these concepts from which we are trying to move. For example, it is not unlikely that the Working Party might have given some consideration to ideas of zoning food crops. This has been shown to be feasible even though in the widest terms we do share a similar climate in all the Caribbean territories.

However, the richness of our soil varies to the extent that it is known that certain crops do thrive better in one territory than it does in others. This can be utilised to our advantage to get the greatest yields from the smallest acreages wherever possible.

But any such ideas will demand a lot of planning and a great deal of confidence and trust in the planners if we are to press ahead along any recommended lines. In the long run, because we do not have a regional ministry of agriculture any ideas coming out of the Working Party sessions will have to be implemented by the various local agricultural ministries. This might yet be the greatest challenge of all.

If after all is said and done we find that the local agricultural experts are not prepared to fall in line with regional planning we would have had just so much talk and a waste of time. Our people cannot afford to be let down in this way. We must be able to show that we can do a lot more besides having food for thought.

BOOK REVIEW

NUTRITIONAL IMPROVEMENT OF FOOD LEGUMES BY BREEDING*
 By Max Milner (ed.). New York: PAG (1973)**

The importance of legumes in the diet has always been emphasized by nutritionists, but despite the nickname "poor man's meat" they make a significant contribution to the average diet in very few countries. Assuming an average protein content of about 25 percent, the 1966 figures show that in only five countries did legumes provide 8 to 14 grams of protein per person per day; in forty-three countries the amount was only 1 to 6 grams. In a few areas the maximum intake revealed in food surveys showed that as much as 30 to 40 grams of protein (110 to 150g beans) were eaten per day. Recent progress with higher-yielding cereals has emphasized the lack of similar progress with legumes. Furthermore, the very success of the cereals has led to diversion of land from legume to cereal production. Hence the reason for this symposium.

The book is the collected advice of a wide variety of specialists: agronomists, geneticists, nutritionists, biochemists and food scientists, together with those involved in plant physiology, pathology and production technology. It comprises the proceedings of a symposium sponsored by PAG in Rome, July 1972. The objective was to summarize the information available and point out the research needed to increase yields of legumes of better nutritional quality and improved consumer acceptance. This was the first time such an interdisciplinary group had sat down to discuss this important food.

Legumes offer great advantages as food; they are not only rich in protein, but the protein is relatively rich in lysine, and thus legumes complement the cereal staples. They fix atmospheric nitrogen and thereby increase the fertility of the soil; in India pulses add more nitrogen to the soil than all the fertilizer used. Pulses can also adapt to dry areas. Legumes also suffer from a number of drawbacks. From the agronomic point of view they take a long time to mature and so cannot be cultivated between cereal crops. From the nutritional point of view drawbacks exist in the form of toxins, bitter substances and flatulence-producing agents. They also take a long time to cook, which means increased expenditure of household fuel.

**This review first appeared in PAG Bulletin, 4, 34-35 (1974).*

***Copies of the paperback edition (389 pp) will be sent gratis by the PAG Secretariat (Protein Advisory Group of the United Nations System, New York, N.Y. 10017, U.S.A.) upon request to individuals and institutions in developing countries. A hardcover, slightly revised edition will be available to others when it is published later this year by John Wiley & Sons, Inc. for approximately US\$18.00.*

The problems to be overcome by plant selection and breeding are obviously considerable. Researchers must look for increased photosynthetic ability, an increase in the usable portion of the plant and a reduction in the bushy, spreading habit in order that more plants can be grown in a given area. Work started six years ago in India to collect germ plasm of pulse crops from all parts of the world. The potential is shown by the range of efficiency of different varieties together with the effects of conditions of cultivation. Within five varieties of pigeon peas the time of maturation ranges between 180 and 280 days, while for green gram it can be as little as 65 days. Although the work is still at an early stage, new varieties of pigeon peas have been released which can produce twice the number of plants in a given area; they mature in five to six months instead of twice as long, and it is expected that they can be cultivated in rotation with wheat in the northwestern wheat belt of India. Varieties of *khesari dhal* have been produced which contain lowered amounts of the neurotoxins responsible for lathyrism.

The nutritional potential of legumes is indicated by the range of 1 to 3.5 percent methionine per gram found in various strains of chick peas and the twofold range in concentration of protein found in several grams and peas.

Similar work was started at the International Institute of Tropical Agriculture in Nigeria in 1972. One problem discussed at the symposium was the limitation of effort to a small number of the most important legumes; it was suggested that for Africa the species offering greatest promise include cow peas, groundnuts, soybeans, pigeon peas and *Phaseolus* beans, depending on area and climate.

Several Latin-American countries are working on similar types of legumes and are searching in particular for disease resistance, since disease is the main limiting factor there.

The entire subject is dealt with both broadly and in depth, covering processing, consumer acceptance and analytical techniques, as well as the aspects mentioned above. In the introduction the chairman states that the value of the meeting would be judged largely by the quality of the publication that came out of it. Using that basis to judge, the meeting was extremely successful. The book will be of great value to a wide variety of scientists and administrators, particularly in developing countries, since it includes a wealth of factual information and up-to-date research data.

One criticism may be offered by a nutritionist - there was too much emphasis on the so-called deficient amino acids, an all-too-common overemphasis. This arose consequent to an indication that higher protein content is associated with lower quality. The discussants apparently lost sight of the relative unimportance of the quality of supplementary protein in a mixed diet. This must be true if, as stated in the FAO Energy and Protein Report, "available information on the amino acid scores of national diets supports the assumption that diets of rich countries have a quality relative to that of milk or eggs of about 80%, and those of poor countries about 70% (although situations may exist ... where the relative quality may be as low as 60%)".

Rich diets consist of cereals supplemented with meat and milk; poor diets are supplemented with other cereals, legumes and vegetables. If the difference between these two extremes is only the difference between 80 and 70, or even 60, then there is little scope for improving the protein quality of the diet compared with the enormous scope in improving quantity. A 50 percent increase in protein content of 50 percent lower quality produces a marked improvement in the diet.

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Two of the papers in the book were by Vernon Royes of the U.W.I. Grain Legume Research Project.

Editor 'Cajanus'

NUTRITION MADE SIMPLE

PRINCIPLES OF VEGETABLE PRODUCTION*

Part I: *climate, soils, irrigation* - by Winston Charles

Vegetable production in the Eastern Caribbean is seasonal mainly, because genetic improvement for production throughout the year has not yet been achieved.

CLIMATE

Weather conditions in the region are generally characterised by two seasons: a dry season from January through April and a wet season from May through December of each year. The majority of vegetables is produced in the dry season because climatic conditions are more favourable to production than in the wet season.

Temperature: Differences in seasonal temperatures have a marked effect on the success with which various kinds and varieties of vegetables can be grown. In the wet season the months are hottest and temperatures average just above 80°F. In the dry season temperatures are cooler and average about 70°F.

Altitude: Temperature is closely correlated with altitude, since temperature drops by about 1°F, for every 300 feet ascent. As a result, vegetables can be grown at different altitudes in accordance with their temperature requirement.

Rainfall: The islands of the Eastern Caribbean are small and therefore receive little convectional rain. Some are high enough to have relief rain and there is a great contrast between those islands which are mountainous and wet like Dominica and those which are low and dry like Antigua and Barbados. Although it may rain at any time of the year, in some years a long drought lasting for several successive months can become a serious problem to vegetable production in the dry season in all the islands. Hence, during these periods it is essential to have

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access to irrigation facilities if vegetable production is to be successful. The period of heaviest rainfall is usually between June to December of each year. In the Windward Islands heavy rainfall is probably the most important limiting factor in vegetable growing for several months of the year, particularly, where the soil is heavy, drainage is slow, and rainfall may total 10 to 20 inches in a week or two. Heavy rainfall may severely stunt and kill vegetable plantings and with the accompanying excess soil moisture and high incidence of diseases, these can have disastrous effect on several vegetable crops.

V.P.D.: Plants respond to vapour pressure deficit (V.P.D.) and not to relative humidity. Two areas may be at the same relative humidity but the vapour pressure deficit would be greater in the area of higher temperature. The vapour pressure deficit is a measure of the suction or drying out force of the surrounding atmosphere. It is the difference between the amount of water vapour actually present and the amount that could exist without condensation at the same temperature. Its values are much more indicative of potential rate of evaporation. Consequently the higher the vapour pressure deficit the higher will be the rate of transpiration. Vapour pressure deficit is usually lower in the wet season. As a result of this it is to be expected that the average rate of transpiration will be lower in vegetable crops grown then.

Day length: Differences in length of day between seasons in the tropics are less than in temperate countries. As a result crops which are photosensitive to long days in temperate regions become limited in production when grown under the relatively short days in the tropics. Only varieties which are selected for short day response would perform successfully under local conditions. The long day sensitive vegetables are onions, sweet corn, soya beans and Irish potatoes. It is possible that production in these crops can be increased by extending the day length by artificial means. However, this may not be an economical proposition. On the other hand, short day-length is important for floral induction in crops such as pigeon peas and sorrel.

Winds: The direction of the prevailing winds can limit vegetable production in several areas in most of the islands in the Eastern Caribbean. Winds of 20-30 miles per hour can reduce the establishment of several vegetable gardens on the windward sides of many islands. In certain areas plants are killed by whipping action of the wind and also by dessication particularly during dry periods. Under these conditions it is difficult or impossible to grow vegetables without some provision for windbreaks.

Types: Vegetable crops can be divided roughly into two broad groups: (1) cool season vegetables and (2) warm season vegetables.

The cool season vegetables are grown successfully during the cool or dry season of the year in the Caribbean and the warm season vegetables are grown during the relatively warm period experienced in the wet

season. During the warm season, the cool season vegetables can be grown successfully at higher elevations since temperatures are relatively lower.

The cool season vegetables are: carrot, cabbage, cauliflower, chive, garlic, onion, Irish potato, radish, shallot, beet, turnips and head lettuce. When these crops are grown under high temperature conditions in the wet season they tend to deteriorate in quality and yield, e.g. varieties of cabbage may fail to form heads, cauliflower may not form curds; carrots deteriorate in colour and tuber size; head lettuce may lack crispness and fails to head; pea may flower but fail to set fruit; beet develops off flavour; turnips and radish result in poor yield and quality due mainly to poor tuber development and cracking. Coupled with these problems is the fact that many of these crops are susceptible to several diseases and pests when grown under unfavourable periods of the year.

The warm season vegetables commonly grown in the Caribbean region are tomato, egg plant, christophene, cucumber, snap beans, hot peppers, sweet peppers, pumpkin, cowpea, okra, watermelon, patchoi and seim bean. The major problems limiting economic production of these crops when grown in the wet season are those associated with susceptibility of diseases and pests.

SOILS

Although vegetable crops can be grown on almost any class of soil in the Eastern Caribbean, sandy loam soils are best preferred for production.

Heavy clay soils are not ideally suited to vegetable production since they are difficult to prepare and can result in water-logging especially in the wet season and if fields are improperly drained. These soils can be improved by the addition of organic matter and to some extent by liming.

Light sandy soils can be used for vegetable production, but since they are not retentive of moisture, their moisture holding capacity can be increased by adding organic matter in the form of manure, crop residues, or soil-improving crops. The fact that these soils are naturally infertile may make it necessary to add adequate fertilizer during crop growth. Sandy soils are more retentive of moisture and of nutrients than are the sands and in general are considered better for vegetable growing.

Organic matter content: In the tropics it is essential to keep the organic matter content of the soil as high as possible, since unlike the temperate countries the decomposition of organic matter proceeds rapidly as soon as the soil is brought under cultivation. The high and warm temperatures contribute to a high rate of microbial activity resulting in the depletion of organic matter in the soil. Hence the constant re-introduction of organic matter to the soil should form part

of the farming operation. Either organic manures or Green Manures or soil improving crops can be used for making a major addition to the organic matter in the soil. In the tropics organic manure can be broken down twice as fast during the wet season as in the dry season. This indicates the importance of moisture in the decomposition of organic matter.

Composting: Composting can be practised as a means of developing a source of organic matter to spread on to a field during land preparation.

Land preparation: For most vegetables good drainage and good soil preparation are essential. For planting small seeds it is important to have the surface fairly smooth and free of clods and trash in order to plant at a uniform depth and to have good coverage of the seed. Seed drills and transplanting machines operate best on a smooth surface.

Drainage: The first consideration in land preparation particularly in the wet season is drainage. Drainage not only removes the excess water but also allows air to enter the soil. Air is essential to the growth of crop plants and beneficial to the organisms which make some of the nutrient available to the plant.

The object of drainage is to maintain the water table at a depth that will permit maximum crop growth and production. It should be adequate enough to remove excess water within a few hours of heavy rain. The land should be ploughed to a depth of 6 to 8 inches. Ploughing helps to (1) incorporate the organic matter in the soil; (2) destroy weeds and often insects and (3) improve texture and aeration.

In ploughing a heavy soil it is necessary to vary the depth in successive ploughing so as to avoid a "pan formation" in the sub-soil which becomes impervious and impedes internal drainage within the soil. After the area is ploughed it is then disked and harrowed. A disc harrow is used on heavy soil as it cuts the clods to a considerable depth. On heavy soil it may be necessary to use a heavy drag or roller to break up clods and lumps to give a smooth surface.

Soil erosion: Soil erosion by water and wind can become a serious problem in many vegetable growing areas in the Caribbean. Water erosion can be controlled by terracing the land, by contour tillage and planting, and by strip cropping.

Terracing: The land is divided up along the contour into separate drainage areas. Water is thus held by the terraces and allowed to soak into the soil and reduces gullying.

Contour farming: Row crops are planted along the contour so that they are planted on the level rather than up and down the slope, or at right angles to it. This form of cultivation conserves moisture and reduces erosion by holding water in the terraces.

Strip cropping: This consists of growing crops in narrow strips across the slope on the contour. The width of the strip is determined by the steepness of the slope, and rate of percolation of water into the soil and the absorptive capacity of the soil and rainfall. The steeper the slope the narrower the strip.

Soil erosion by wind can be controlled by the use of windbreaks of various kinds: (1) trees, (2) shrubs, (3) fences of boards, (4) planting of forage crop. Windbreaks protect the crop by reducing the velocity of the wind.

IRRIGATION

Since the most favourable period of vegetable production is the *dry season* when rainfall is inadequate it is necessary to supply water sufficiently to maintain adequate soil moisture for crop growth. The frequency of irrigation required is greater for shallow rooted crops than deep-rooted crops. There are four major systems of irrigation: surface flow, overhead, sub-irrigation and trickle irrigation.

1. *Surface flow system:* (a) water is released from a ditch at the edge of the field. It is then conducted into furrows between single rows or between narrow beds - this system is called furrow irrigation.

(b) water is run over furrows or beds by enclosing a bank of earth between furrows and the whole surface becomes covered - this system is called flood irrigation.

Surface irrigation can only be practised successfully with a slope of 4 to 12 inches/100 ft. and cannot be used on slopes in many of the mountainous islands. Where it is used the field should be graded to give best results.

2. *Overhead system:* Water is carried under pressure in pipes. There are two means of application: (a) oscillating nozzle lines installed 50 ft. apart. Each line has a set of brass nozzles spaced at 3 ft. apart. The water pressure used can vary from 35 to 50 lbs.

(b) rotary sprinklers with nozzles arranged in such a manner that one applies water to the inner part of the circle and the other to the outer part of the circle. Sprinklers are spaced 40 ft. and lines 60 ft. The rate of application is equivalent to 1" water applied to 1 acre in two hours.

3. *Sub-irrigation:* Water is fed through underground tiles laid at regular intervals in such a way that water permeates the soil from below. Practised where water is abundant. This method is not used to any large extent in the West Indies.

4. *Trickle irrigation:* In this system water oozes out of joints spaced in accordance with the crop spacing. This system gives the greatest economy in water use and is the most efficient method of maintaining soil moisture constant. The pressure used is about 5 lbs/sq. inch, and can be developed by gravity. The system is relatively cheap. However it has not been used to any extent in the West Indies.

Three terms used in irrigation:

Field capacity: the maximum amount of water or soil moisture that can be held in a freely-drained root zone. It is the amount of water held by the soil against the force of gravity after water has passed through.

Permanent wilting point: the moisture percentage when plants wilt and do not recover unless water is added to the soil.

Available soil moisture: the difference between the moisture content of the soil and the wilting point. It is the amount of water available for plant growth, and is frequently referred to as *readily available moisture*.