

# CAJANUS

The  
Caribbean Food & Nutrition Institute  
Quarterly

## INDEX

VOLUME 11  
1978

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

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

THE EDITOR

SUBJECT INDEX - CAJANUS, VOLUME 11, 1978

	<i>Pages</i>
 <u>A</u>	
Advertising	67, 120, 146
Agriculture	128
Agriculture - <i>Dominica</i>	253
Anaemia	135
Audio-visual aids	235
 <u>B</u>	
Black bean <i>see</i> Legumes	
Book reviews	52, 61, 141 202, 203, 263
Bottle feeding	63, 130
Breast cancer	2
Breast feeding	2, 112 149, 198, 205
 <u>C</u>	
Calories <i>see</i> Energy	
C.H.A. <i>see</i> Community Health Aides	45, 132
Child-to-Child Programme	74
Communication	45
Communication <i>see also</i> Advertising, Audio-visual aids; Mass media; Nutrition education; Nutrition education campaigns	

	<i>Pages</i>
 <u>C (cont'd)</u>	
Communication - Guatemala	151
Community Health Aides	51
 <u>D</u>	
Dark green leafy vegetables	207
Dietary goals - United States	11
 <u>E</u>	
Energy	231
 <u>F</u>	
Fibre	71
Food and Drug regulations - Guyana	134, 202
Food and Nutrition Policy - Jamaica	56
Food handlers	242
Food hygiene	97, 242
Food marketing	13, 34, 218
Food marketing - Jamaica	52, 138
Food marketing - St. Lucia	34, 45
Food processing	49, 97, 250
Food production - St. Lucia	34
Food promotion see Advertising	
Food vendors	131

Pages

G

Gungo pea *see* Pigeon pea

H

Health - Barbados 261

Health - Guatemala 151

Health - Jamaica 55, 57

Higglers *see* Food marketing - Jamaica

I

Infant care 4, 52

Infant feeding 67, 121, 141  
200, 249, 261

Infant feeding *see also* Bottle feeding;  
Breast feeding

J

Joules 231

L

Legumes 48, 53

Legumes *see also* Pigeon pea; Soya bean

Livestock 209

	<i>Pages</i>
 <u>M</u>	
Magic	235
Malnutrition	24, 218
Malnutrition <i>see also</i> Nutrition education	
Mass media	8
Metric system	46, 47, 80, 231
Metric system <i>see also</i> Système Internationale d'Unités	
 <u>N</u>	
Nursing education	48
Nutrition - <i>Caribbean</i>	252, 257
Nutrition - <i>Jamaica</i>	258
Nutrition education	6, 8, 74 132 144 235
Nutrition education - <i>Guatemala</i>	151
Nutrition education - <i>Jamaica</i>	6, 8 51, 198, 252
Nutrition education campaigns	8, 151, 198, 252
Nutrition in medicine	88
 <u>O</u>	
Oyster culture	213

	<i>Pages</i>
 <u>P</u>	
Pigeon pea	3, 54
Pigs	250
 <u>R</u>	
Recipes	54, 85, 86, 202
Regional Food Plan	45, 132
 <u>S</u>	
School feeding - <i>Jamaica</i>	139
School feeding - <i>Trinidad and Tobago</i>	127, 137, 197
SI Units <i>see</i> <i>Système Internationale d'Unités</i>	
Soya bean	53, 137
<i>Système Internationale d'Unités</i>	203, 232
 <u>T</u>	
Tonics	199

## AUTHOR/TITLE INDEX - CAJANUS, VOLUME 11, 1978

KEY

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

Page

A

<i>Advertising Baby Foods.</i>	(NC)	67
<i>Alfin-Slater, Roslyn B. and Jelliffe, Derrick B.</i> <i>The Vital Role of Dark Green Leafy Vegetables.</i>	(AR)	207
<i>The Application of Magic as an Audio-Visual Aid in</i> <i>Nutrition Education. Van Dokkum, W.</i>	(AR)	235

B

<i>Bahamianising the Diet.</i>	(NC)	132
<i>Barbados Gradually Going Metric.</i>	(NC)	47
<i>Behar, Moises. Nutrition and the Future of Mankind.</i>	(AR)	24
<i>Black Bean Experiment Being Prepared.</i>	(NC)	48
<i>A Boost for the Breast. Gurney, J. Michael.</i>	(ED)	205
<i>Breast Feeding Women Give Cancer Clue.</i>	(AR)	2
<i>Breast or Bottle Feeding: Is There Really a Choice</i> <i>for the Third World? Myres, A.W.</i>	(AR)	112
<i>Buxedas, Martin. Yes, the Cow Can Indeed Be a White</i> <i>Elephant.</i>	(AR)	209



C

Cameron, Margaret and Hofvander, Yngve. <i>Manual on Feeding of Infants and Young Children.</i> [Reviewed by Versada Campbell]. (BR)	141
Campbell, Versada. [reviewer]. <i>Manual on Feeding of Infants and Young Children.</i> Cameron, Margaret and Hofvander, Yngve. (BR)	141
Careful Checks on Food and Drugs. (NC)	134
CARICOM to Develop Communication System in Support of Regional Food Plan. (NC)	45
Changing the Traditional Approach to Production and Marketing. Matthew, Cyril T. (NC)	34
The CHILD To Child Programme. (AR)	74
Colle, Fernandez de, Susana and Colle, Royal D. <i>The Communication Factor in Health and Nutrition Programmes: A Case Study from Guatemala.</i> (AR)	151
Colle, Royal D. and Colle, Fernandez de, Susana. <i>The Communication Factor in Health and Nutrition Programmes: A Case Study from Guatemala.</i> (AR)	151
<i>The Communication Factor in Health and Nutrition Programmes: A Case Study from Guatemala.</i> Colle, Royal D. and Colle, Fernandez de, Susana. (AR)	151
Counting the Calories, or Juggling with Joules. Greaves, J. Peter. (AR)	231

D

Developments of New Food Products: Nutritional Considerations. (RR)	146
Dominica Moves to Boost Agricultural Production. (NC)	253

	<i>Page</i>
 <u>E</u>	
<i>Eat Right.</i> (NC)	252
<i>Educational Handbook for Health Personnel.</i> Guilbert, J.J. [Reviewed by Health and Biomedical Information Programme, WHO]. (BR)	263
<i>Efficiency Needed in Pig Industry.</i> (NC)	250
 <u>F</u>	
<i>Food and Fibre.</i> (AR)	71
<i>Food Marketing Programmes in a Small Developing     Economy.</i> McIntosh, Curtis E. (AR)	13
<i>Food Science.</i> Gordon, G. et al. [Reviewed by Manuelita Zephirin]. (BR)	61
<i>Food Vendors Forbidden to Sell Flat on the Ground.</i> (NC)	131
<i>Further Work on Preserves.</i> (NC)	49
 <u>G</u>	
<i>Getting Caribbean Food Plan to Work.</i> (NC)	132
Gordon, G. et al. <i>Food Science.</i> [Reviewed by Manuelita Zephirin]. (BR)	61
Greaves, J. Peter. <i>Counting the Calories, or Juggling     Juggling with Joules.</i> (AR)	231
Guilbert, J.J. <i>Educational Handbook for Health     Personnel.</i> [Reviewed by Health and Biomedical Information Programme, WHO]. (BR)	263
Gurney, J. Michael. <i>A Boost for the Breast.</i> (ED)	205

	Page
<u>G (cont'd)</u>	
Gurney, J. Michael. <i>The Mark-Up and the Soft-Sell.</i> (AR)	218
Guyana to Go Metric. (NC)	46
 <u>H</u>	
Health and Biomedical Information Programme, WHO. [reviewer]. <i>Educational Handbook for Health Personnel.</i> Guilbert, J.J. (BR)	263
Help for St. Lucia Marketing Board. (NC)	45
Hofvander, Yngve and Cameron, Margaret. <i>Manual on Feeding of Infants and Young Children.</i> [Reviewed by Versada Campbell]. ((BR)	141
 <u>J</u>	
Jelliffe, Derrick B. and Alfin-Slater, Roslyn B. <i>The Vital Role of Dark Green Leafy Vegetables.</i> (AR)	207
 <u>K</u>	
Keeping Food Safe from Harmful Germs. (AR)	97
Krehl, Willard A. <i>Nutrition: Does the Physician Know Enough?</i> (AR)	88
 <u>L</u>	
Lessons in Loving. (NC)	4

	Page
 <u>M</u>	
<i>Managing the Metric Mystery.</i> (AR)	80
<i>Manual on Feeding Infants and Young Children.</i> Cameron, Margaret and Hofvander, Yngve. [Reviewed by Versada Campbell]. (BR)	141
<i>The Mark-Up and the Soft-Sell.</i> Gurney, J. Michael. (AR)	218
<i>Matthew, Cyril T. Changing the Traditional Approach to Production and Marketing.</i> (NC)	34
<i>Media Campaign to Promote Good Nutrition and Breast Feeding.</i> (NC)	198
<i>Medical Examination of Food Handlers.</i> (AR)	242
<i>Milk Company's Service Discontinued.</i> (NC)	249
<i>More on the Baby Feeding Issue!</i> (NC)	149
<i>Myres, A.W. Breast or Bottle Feeding: Is There Really a Choice for the Third World.</i> (AR)	112
 <u>Mc</u>	
<i>McIntosh, Curtis E. Food Marketing Programmes in a Small Developing Economy.</i> (AR)	13
 <u>N</u>	
<i>Nutrition and the Future of Mankind.</i> Behar, Moises. (AR)	24
<i>Nutrition: Does the Physician Know Enough.</i> Krehl, Willard A. (AR)	88
<i>Nutrition Education Campaign Launched.</i> (PR)	8

	<i>Page</i>
 <u>N (cont'd)</u>	
<i>Nutrition Education Stressed at Children's Hospital.</i> (NC)	6
<i>Nutritionist for CARICOM Health Section.</i> (NC)	252
 <u>O</u>	
<i>Okwesa, B. Andrea. Over to You!</i> (ED)	63
<i>Okwesa, B. Andrea. The Right to Know.</i> (ED)	144
<i>Over to You! Okwesa, B. Andrea.</i> (ED)	63
<i>Oyster Culture Experiment in Jamaica.</i> (NC)	213
 <u>P</u>	
<i>Patent Medicines and Tonics Declared Unnecessary for</i> <i>Good Nutrition.</i> (NC)	199
<i>Plan for Local Baby Food Well Ahead.</i> (NC)	200
 <u>R</u>	
<i>Readers Evaluation of Cajanus.</i> (RR)	66
<i>Report Denounces Bottle Feeding.</i> (NC)	130
<i>The Right to Know. Okwesa, B. Andrea.</i> (ED)	144
 <u>S</u>	
<i>School Feeding Plan to Cater to Different Ethnic</i> <i>Groups.</i> (NC)	197
<i>School of Nursing Established.</i> (NC)	48

	Page
<u>S (cont'd)</u>	
<i>Schools Move Ahead in Food Planting.</i> (NC)	128
<i>Special Interest Food Groups Attack Dietary Goals for U.S.</i> (NC)	11
 <u>T</u>	
<i>Trinidad School Feeding Programme to be Based on Food Factories.</i> (NC)	127
 <u>V</u>	
<i>Van Dokkum, W. The Application of Magic as an Audio- Visual Aid in Nutrition Education.</i> (AR)	235
<i>The Vital Role of Dark Green Leafy Vegetables.</i> Alfin-Slater, Roslyn B. and Jelliffe, Derrick B. (AR)	207
 <u>W</u>	
<i>Winners of Nutrition Competition Announced.</i> (NC)	130
 <u>Y</u>	
<i>Yes, the Cow Can Indeed Be a White Elephant.</i> Buxedas, Martin. (AR)	209
 <u>Z</u>	
<i>Zephirin, Manuelita. [reviewer]: Food Science.</i> Gordon, G. et al. (BR)	61

*Opinions expressed by the contributing authors should not necessarily be construed as representing the views of the Caribbean Food and Nutrition Institute, nor of the bodies represented on the Policy Committee of the Institute.*

*The reproduction of articles that are reprinted from other publications cannot be authorized; otherwise, contents of this Bi-monthly may be reprinted or excerpted freely without prior permission, provided the word CAJANUS be placed at the end of the article.*

## FROM THE EDITOR

*Cajanus* greatly appreciates reactions from our readers regarding your response to specific items appearing in each issue, as well as your information needs in food and nutrition and how we could help in filling these.

We are constantly examining ways to improve - to widen our coverage to include more countries' experiences, to determine the usefulness of the information disseminated through these pages and to increase awareness of the broad field of food and nutrition.

We value your letters which we regard as an important means of assessing whether or not we are filling a need and how successfully this is being accomplished. Because of this we hope that many more of our readers will be sufficiently motivated to write and express their views on any aspect of our bi-monthly which interests them.

THE EDITOR

▲

### CAJANAQUOTE

"It is extraordinary that a third of the world's population is permitted to dispose of two-thirds of the harvest from land and sea. There are now millions in the poor, hungry and developing world who toil on fetid farms to provide the developed world with bananas and cocoa, coffee and sugar, cotton and oil seeds ..."

- Sripati Chandrasekhar  
Vice Chancellor and President  
of Annamali University in  
India.  
Minister of Health and  
Family Planning, 1967-1970



## TOPICS AND COMMENTS

### BREAST-FEEDING WOMEN GIVE CANCER CLUE\*

An important new clue to the cause of breast cancer has been found in a study of Chinese women in Hong Kong. Women of the "boat people," who fish and transport cargoes around the Pearl River delta, customarily feed their babies with the right breast only. Now it has been found that they are more likely to develop cancer in the left breast, which has not been suckled.

It used to be a popular theory that breast-feeding gave protection against breast cancer. Although this has been disputed by experts in recent years, there does seem to be evidence that nuns and married women without children are more vulnerable to the disease. And it is probable that the Hong Kong discovery will inspire renewed examination of the old belief.

The Chinese women's breast-feeding practice comes about because the opening in their clothing is traditionally on the right side. After the birth of their babies, both breasts fill with milk in the normal way. But the right breast, which is suckled, becomes larger and firmer while the unused left breast remains small and soft.

A study of 73 such women by doctors at the Queen Mary Hospital, Hong Kong, and the Queen Elizabeth Hospital, Kowloon, found that 27 out of 34 women aged over 55 developed breast cancer in the unsuckled breast. Entitled "Unilateral breast-feeding and breast cancer", the study, by Ing, Ho and Petrakis, also showed that, in women under 55, the number suffering cancer in each breast was about equal. This suggests, therefore, that breast cancer developing after the menopause may be prevented by breast-feeding earlier in life.

---

\*Adapted from an article in *The Lancet*, 16 July 1977, pp. 124-127.

The doctors concerned think that chemicals which cause cancer may accumulate in the breast over the years unless they are flushed out by the flow of milk. Without this flow, the breast tissues would be exposed to the chemicals for a longer period, and so the chance of cells becoming cancerous would be greater. ▲

### RECIPE FOR PIGEON PEA STEW\*

½ lb. salt beef  
2 cups fresh pigeon peas  
¼ lb. dasheen  
¼ lb. carrots  
¼ lb. pumpkin  
2 oz. butter or margarine  
2 pints water

#### Seasonings:

1 onion (chopped)  
2 cooking tomatoes  
1 blade escallion (chopped)  
1 clove garlic (pounded)  
Salt, pepper, thyme

#### Method:

Soak salt beef for at least half an hour in cold water. Cut into small pieces. Peel, wash and dice pumpkin, carrots, dasheen; wash peas. Lightly fry seasonings in saucepan. Add meat, peas, dasheen, pumpkin and water to cover. Simmer, covered for about 1 hour. Remove pumpkin, mash and return to pot. About 15 minutes before stew is ready, add carrots.

\*From "The Voice" (St. Lucia), "Focus on Nutrition" Column, 19 July 1977.

Editor's Note: The pigeon pea (*Cajanus cajan*) known as gungo pea in Jamaica is from the legume family. Legumes are all good sources of protein, some vitamins and iron, as well as energy. They are usually cheaper than meat in terms of their nutritional value. A simple quiz - can any of our readers give us the nutritional analysis for this dish, confining the analysis to energy (calories) protein and iron? See also "Cajanus special dinner" in *Cajanus*, Vol. 1V, 1971, p. 212, a multimix for infant feeding using pigeon pea.

## LESSONS IN LOVING\*

Teaching mothers-to-be the techniques of bathing and caring for their babies by training with dolls has long been a feature of human antenatal clinics. Now it may be introduced into Britain's zoos. For zoologists have discovered that antenatal classes work for gorillas too - complete with gorilla-dolls.

Usually the mother gorilla in a zoo displays little interest in or affection for her young, perhaps because she has never seen how it is done. Gorilla babies, therefore, usually have to be reared by humans.

But there is one exception now - Dolly, a 14-year-old gorilla in the San Diego Wild Animal Park. She has become a loving and caring mother - thanks to antenatal classes.

It was not always so. Her first baby, born in 1973, had to be taken away from her because she simply would not allow him to cling to her and made no attempt to nurse him.

When she became pregnant again in 1974, the zoo decided she must be taught the error of her ways. First, they tried visual teaching aids. They showed her films of gorillas and their infants. They tried several films, in fact, but Dolly just wouldn't concentrate.

Next, they decided to make a gorilla doll - just a stuffed piece of denim with a face drawn on with ink. Dolly was taught to hold it the right way up so that it could suckle her, to the command of "Turn the baby around, Dolly." She also learned to respond to "Pick up the baby, Dolly," "Be nice to the baby, Dolly," and "Show me the baby, Dolly."

---

\*Reproduced from *The Sunday Times*, 12 June 1977.

By the time she gave birth, she had thoroughly learned these commands - with the aid of many titbits. There was a setback, however, when her new baby began to cry. Dolly was confused for the gorilla-doll had been silent. "However, the command, 'Be nice to baby, Dolly' delivered by a familiar human, soon solved the confusion", reports an article by Steven Joines in The International Zoo Yearbook, 17.

As gorillas are now facing the threat of extinction in their native habitats, any techniques that can help them to reproduce in zoos are extremely valuable. San Diego Park hopes that Dolly may now serve as an example for the other young female gorillas in the zoo, showing them how to care for their infants. The happy ending to her story came when she was not only allowed to keep her second baby, Binti - but could also be allowed to nurse her first-born that she once rejected. ▲

#### CAJANAQUOTE

*"The problem of malnutrition in the poorer countries is so urgent that it cannot wait for a satisfactory level of economic growth to be achieved. To neglect malnutrition would mean that economic growth itself would be held back for a critical and perhaps indefinite period."*

- Edouard Saouma  
FAO Director-General

## NUTRITION EDUCATION STRESSED AT CHILDRENS' HOSPITAL\*

The regular Wednesday afternoon nutrition clinics at the Bustamante Hospital for Children in Kingston, Jamaica show how basic foods can be used to provide nutritious meals.

The Public Health Nurse in charge of the clinic has said that their special interest is in children suffering from setbacks due to malnutrition. At the clinics, mothers are taught how to provide proper nutrition for their children which in turn causes a reduction in cases of malnutrition at the Hospital.

The mothers who attend the clinic have children who are patients suffering from malnutrition or related health problems. The mothers are referred to the clinic by the doctors at the Hospital. Some start attending the clinic before their children are discharged from the Hospital.

At the nutrition clinic, foods like corn soya blend, wheat soya blend, bulgar wheat, skimmed milk and flour are distributed to the mothers. They are given basic nutritional advice, and taught how to prepare the foods in a variety of ways. They are taught the necessity of combining those foods which provide basic daily dietary requirements.

The mothers are also given pamphlets with simple recipes using the foods which are distributed. They are also taught how to use inexpensive kitchen utensils like a strainer in preparing the food.

At the end of each demonstration class, the food supplies are distributed to each mother, in varying amounts depending on her family size.

---

\*Adapted from *The Daily Gleaner*, Jamaica, 26 August 1977

According to the Nurse, the mothers used to buy expensive feeds for their babies and then would have to 'stretch' them to make them last longer because of the expense. Babies fed in that manner did not receive adequate nutrition which created a variety of problems related to malnutrition.

At the clinic antenatal advice is also given to pregnant mothers. This includes lectures on the development of the unborn child and the health of the mother during pregnancy. They are also taught the desirability of breast-feeding as long as possible.

The nutrition Clinic at the Children's Hospital is the only one of its kind in Jamaica, but the food supplies are also distributed at all child welfare clinics, and Government health institutions. This is part of the Ministry of Health's food distribution programme for nursing mothers and school children. Some 100,000 school children and nursing mothers have already benefitted from the programme which began in September 1976. ▲

#### CAJANAQUOTE

*"We belong to a very, very small single physical biosphere upon which we depend for absolutely everything (and) which ... is beginning to show certain strain in its resources. And unless we manage them better, it isn't only the poor who are going to suffer; everybody is going to suffer."*

- Barbara Ward

## NUTRITION EDUCATION CAMPAIGN LAUNCHED\*

A national mass media Nutrition Education/Communication Campaign which will extend over a period of three years has been launched in Jamaica. This Campaign, an integral part of the Primary Health Care programme of the Ministry of Health and Environmental Control, is intended to produce awareness of the nutritional status of the Jamaican population and the means whereby existing nutritional problems may be alleviated through the achievement of correct dietary habits.

A wide cross-section of the Jamaican population will be exposed to mass media messages designed to foster sound nutritional practices particularly among pregnant and lactating women, to promote breast feeding and proper weaning habits and to encourage family planning and the use of MCH services.

The major thrust of the programme will be antenatal and post-natal care, the reduction of malnutrition among children from birth to 4 years of age, and the reduction of anaemia in pregnant and lactating women.

Self-sufficiency in food production will also be stressed and the keeping of backyard garden plots, particularly to enhance the diet of the pregnant and lactating woman, will be encouraged. Another aspect emphasised throughout the Campaign will be the fuller involvement of fathers in the care and welfare of their families, and an important behavioural objective is the growth of a sense of responsibility among Jamaican fathers. Failure by fathers to recognise and accept their parental role was indicated in a Baseline Survey carried out prior to the Campaign to determine the levels of knowledge, attitudes and practices particularly in relation to breastfeeding, present among the Jamaican populace.

---

\*From a news release of the Caribbean Food and Nutrition Institute.

*FIRST PHASE*

The first phase of the Campaign, which is intended to sensitize the public to the nutritional situation, is now in progress and will run until the end of January 1978. During this period a series of seminars involving community-based associations, societies and clubs will be held throughout the rural areas of the country. The aim of these meetings will be to enlist the support and cooperation of rural opinion leaders in the communication effort. As part of this programme, meetings have already been held with various categories of workers within the country's health services.

The mass media phase, which will go into operation in February 1978 and continue until mid-1980, will include the use of radio and television spots and programmes, newspaper features and advertisements, posters, billboards and calenders to convey the messages "The Breast is Best" and "Good health begins with eating right".

A series of charts showing the types of foods recommended for infant feeding at different stages of life will also be displayed in maternal and child health centres, clinics, hospitals and doctors' offices. These, together with charts showing the different 'food groups' will attempt to augment and reinforce the face-to-face communication between members of the public and the various health teams working in the field. During this phase of the Campaign the medium most heavily utilized will be radio which has been shown to be accessible even to the most remote parts of the country.

Messages on radio will stress, in addition to breastfeeding, the desirability of feeding baby with cup and spoon rather than with the bottle, and considerable emphasis has been placed on the eradication of myths and superstitions surrounding breastfeeding and weaning, which as the Baseline Survey revealed, were very much in evidence.



Phase three constitutes the distribution of educational materials, including brochures, films and other visual aids designed to be used primarily in health centres, also simple supplementary materials for use at the family level. The mass media education Campaign has been developed under the supervision of a multi-disciplinary review committee including representatives of the Ministry of Health and Environmental Control, the Nutrition Department, Bureau of Health Education, Agency for Public Information, Institute of Mass Communications, UWI; Scientific Research Council, National Family Planning Board and the Caribbean Food and Nutrition Institute.

*Editor's Note: This information was circulated to English-speaking Caribbean media via CFNI's "Nyam News" (No. 40 October 1977). For further information on the Campaign, readers are asked to contact the Ministry of Health and Environmental Control, 10 Caledonia Avenue, Kingston 10, Jamaica. Mrs. Norma Soas is the Co-ordinator of the Programme.* ▲

#### FILLING THE RICE BOWL

Since 1972, many countries in Asia, Africa and Latin America have registered favorable trends in rice population. Two countries in West Africa have become self-sufficient in rice, and in Colombia production has almost doubled. In the Far East, China, Thailand, India and the Philippines have significantly stepped up their production - and the world paddy output has increased from 304.7 to 345.8 million tons.

- International Rice Commission  
Food and Agriculture  
Organization of the United  
Nations (FAO)

## SPECIAL INTEREST FOOD GROUPS ATTACK DIETARY GOALS FOR U.S.\*

A controversial U.S. senate report published in January 1977 that recommends radical changes in American eating habits has come under attack from an increasing number of special interest groups.

The Report entitled "Dietary Goals for the United States", which says its recommendations would lead to longer and healthier lives, is the most specific yet issued by the federal government.

The six dietary changes recommended are to:

- increase complex carbohydrate (vegetables, fruits, grains) consumption to account for 55 to 60 percent of caloric intake.
- reduce over-all fat consumption from approximately 40 percent to 30 percent.
- reduce saturated fat consumption to account for about 10 percent of total calories; and balance that with polyunsaturated and mono-saturated fats, which should account for about 10 percent of calories each.
- reduce cholesterol consumption to about 300 milligrams a day.
- reduce sugar consumption by about 40 percent to account for about 15 percent of total calories.
- reduce salt consumption by about 50 to 85 percent.

The attacks on the Report which was prepared by the Senate Select Committee on Nutrition and Human Needs come as no surprise to one of its consultants who said: "There will undoubtedly be

---

\*Adapted from *The Guardian* (Eng.), 4 September 1977

many people who will say we have not proven our point; we have not demonstrated that the dietary modifications we recommend will yield the dividends expected." He was right:

First, the cattle producers protested because the goals recommended reducing the consumption of meat and increasing the consumption of fish and poultry. Then the sugar interests said the recommendation for reducing the intake of sugar by 40 percent had no scientific basis.

The National Canners' Association is upset because the Report suggests using fresh and frozen instead of canned vegetables.

The egg producers had their say: the nutrition committee heard from them that cholesterol levels are not lowered by a reduction in egg consumption.

The most sweeping attack on the dietary goals, however, came from the American Medical Association. The AMA said they should not be adopted because there is no proof that diet is related to disease and, besides, changing American eating habits might lead to economic dislocation. The National Dairy Council endorsed the AMA's statement. The Association also contends that insufficient evidence exists to support the need for or the benefit from major changes in the national diet as proposed.

*Editor's Note: A modification of the diets of citizens of the U.S.A. to achieve the goals outlined above will result in better health but we agree that this evidence is not conclusive.*

*In the Caribbean most consumption patterns are different from those in the U.S.A., although high intakes of salt or sugar are common in both regions. We find the U.S.A. goals to be useful and relevant in warning us not to follow along the same pattern that probably leads to the diseases of affluence. Our aim should rather be moderate diets, at moderate price, superlatively cooked but without chaining housewives to the stove.*

## FOOD MARKETING PROGRAMMES IN A SMALL DEVELOPING ECONOMY\*

*by*

*Curtis E. McIntosh*

Food marketing encompasses all the business activities involved in getting foodstuffs from their origin of production to consumers in adequate quantity, quality or form, appropriate time and place desired by them, and the development aspects of the system for transfer, pricing and communication among participants within the marketing system.<sup>1</sup> The activities performed during the marketing process include: a) the exchange functions of buying, selling and price determination; b) functions relating to physical supply comprising assembly and transportation, storage, food processing and preparation; and c) synergistic functions to a) and b) consisting of market information and news, financing and risk acceptance, grading and standardization, product development, demand creation and supervision<sup>2</sup>. The form the development of the marketing system takes is dependent on the regulatory and service programmes of Government and other external influences.

The pricing and communication activities constitute the hub of the marketing process but explicit recognition must be given to the physical and technical aspects associated with enhancing place, quality and form, and time utility of foodstuffs since these aspects hold unlimited scope for industrialization.

---

\*Based on a Paper prepared for the 12th West Indies Agricultural Economic Conference, Antigua, 24-30 April 1977.  
Dr. Curtis E. McIntosh is Food Economist (Research) at the Caribbean Food and Nutrition Institute (Trinidad Centre).

*FOOD MARKETING AND ECONOMIC DEVELOPMENT*

Economic development connotes a continuous improvement in the general welfare of all segments of the population. The elements constituting general welfare include employment opportunities, income and income distribution, nutrition and health, habitat, balance of payments, economic and political power, and such other variables that the society may deem important. The interrelatedness of these elements must be recognised and goals and aspirations of individuals must not be set above those of the society as a whole.

It has long been recognised that food marketing has a major role in economic development. Food is a prime necessity for life and participation in food consumption has no social barriers. Not surprisingly, food expenditures loom high in the budget of consumers in all countries. In developing countries this proportion takes on greater significance. For example, in many Caribbean countries average annual household food expenditure accounts for over 50% of the income and among low income families the figure is closer to 90%<sup>3</sup>. These figures compare with an estimated average of 25.6% of consumer expenditures being devoted to food in the United States in 1966.<sup>4</sup> Such high food expenditures, combined with a high dependence on imported food supplies, make the food industry a very important and dynamic sector. The myriad activities associated with food production and getting foodstuffs from production areas to consumers highlight the job opportunities that could be created through efficient food marketing. The maldistribution of income - a legacy of a marketing system which developed to service the import and export sectors to the disadvantage of the internal food production and distribution sector - could be alleviated by appropriate stimulation and modernization of the marketing system in the service of local food production and distribution.

While the relative contribution of agriculture to the gross national product generally declines in the course of development, the increased demand for food and food services tends to nullify the underemployment problems that are likely to occur within agriculture through job creation in the marketing sector, especially as the food marketing sector, even at a high level of sophistication, remains fairly labour-intensive.

The influence of population on food demand cannot be over-emphasized.<sup>5</sup> With increasing population the need for more food is immediately apparent. The age and sex composition and the geographic distribution of the population affect the quantity, quality, time and place of demand. The tendency towards increasing urbanization puts a greater strain on the marketing system to adjust to needs of the population.

Efficient food marketing has a significant role to play in economic development, and particularly in improving the nutritional status of all segments of the population. Realization of this potential rests with the formulation and implementation of sound food and nutrition policies incorporating marketing projects relating to transportation, storage, processing, pricing and communication, among others.

#### *ASPECTS OF FOOD MARKETING IN ANTIGUA*

The distribution of most foods and services including food-stuffs in Antigua is conducted within an environment of private enterprise. The price mechanism operates in allocating scarce resources, determining incomes and income distribution, which in turn limit the levels of consumption of the population. Imperfections within the market leading to inefficiency, inequity, and concentration of wealth and economic power in the hands of a few have not gone unnoticed and the Government has attempted to minimize these consequences by active intervention within the marketing system. Examples of such intervention are price control programmes,

the development of the Central Marketing Corporation empowered to perform marketing functions and regulate marketing in the State, and the control of large acreages of arable land. What has emerged then, is a mixture of public and private entities within the economic system utilizing the price system as the central organizing force.

From a nutritional standpoint, the bulk of the foodstuffs consumed in Antigua is imported. The channels of distribution of these foodstuffs are through a small number of importers and/or wholesalers, a few large supermarkets and a large number of small shops. The channels of distribution of locally-produced foodstuffs overlap to some degree with those for imported foods but market vendors operating at public and roadside markets are the main links with the farmer. There are a large number of these marketers handling similar products within a small radius, typical of a 'perfectly' competitive market. In the more concentrated import/wholesale sector for imported foodstuffs there are opportunities for collusive behaviour in price setting and supply control. The consequences are inflationary tendencies and a shortage of foodstuffs, both militating against the improvement or even maintenance of a satisfactory nutritional status.

The Central Marketing Corporation with its limited resources (both financial and technical) can do very little in dealing with the formidable challenge that it faces. To attempt to perform the marketing functions for such a wide range of highly perishable foodstuffs, usually at a time when most other marketing intermediaries are filled, is a quixotic challenge. This is not to suggest that the Corporation has always made the best use of its resources. Improvements could be made in pricing policies, the handling, grading and storage of products, and simple processing of products to avoid waste could be undertaken.

It has been often put forward that the size of the market for locally-produced foodstuffs is small, thereby causing gluts and depressed prices. In the light of the high import dependence this situation is rather paradoxical. It is more likely that the choice of products in present agriculture programmes is bad. Major expenditures by Antiguanans are on cereal and cereal products, meat and dairy products, and sugar and sugar products. Programmes emphasizing vegetable production would have only a slight effect on improving self-sufficiency.

#### *DEVISING FOOD MARKETING PROGRAMMES*

Earlier, reference was made to the need for formulating sound food and nutrition policies in small developing economies to make maximum gains from the contribution of food marketing to economic development. According to Rueda-Williamson, a food and nutrition policy is:

"a coherent set of principles, objectives, priorities and decisions adopted by the Government and applied by its institutions as an integral part of the national development plan in order to provide all the population, within a specified time, the food and other social, cultural and economic conditions essential to satisfactory nutrition and dietary well-being".<sup>6</sup>

Such a policy attempts to bring into a desirable balance, food supply, food demand and nutritional requirements. Devising food marketing programmes against the background of such a policy calls for a good understanding of the nutritional problems, the shortcomings of the present marketing arrangements in solving these problems, setting up specific objectives and targets for the programmes, selecting, scheduling and implementing projects, and



finally evaluating and revising the programmes. This is not a once-and-for all exercise since the programmes must adapt to changing conditions.

### *Nutritional Problems*

Available data for the Region indicate that the major nutritional deficiencies in terms of numbers affected and severity are (a) a shortfall in energy requirements due to insufficient food intake; (b) protein deficiency associated with the shortfall in energy intake (protein consumed is first used to meet energy requirements and thus become unavailable for its specific role in growth and development); and (c) iron-deficiency anaemia especially among pregnant and lactating women and pre-school age children. Of these, (a) and (b) combined constitute the so-called protein energy malnutrition syndrome. This syndrome affects primarily children under five years. It is useful to emphasize that the main focus must be on energy and the inclusion of a 'protein' in the description should not be misconstrued to imply that the source of energy should of necessity be high in this nutrient, though a high protein content could enhance the product.

Recent data for Antigua support the general conclusion on the nutritional status in the Region. The situation was summarised by Gueri as follows:

"Approximately 43% of all children under 5 years show a weight for age below 90% of the Standard and can be considered malnourished. Many of these children were already born with less than satisfactory weight, as the birth records show that 40% of the children born since January 1974 have a weight below 90% of the Standard and can be classified as 'malnourished at birth'. 7.5% of the children in our sample suffered 2nd and 3rd degree malnutrition".<sup>7</sup> (See Table 1)

Table 1: Nutritional Status by Weight for Age of  
a Sample of Children (0-59 months)  
attending the Child Welfare Clinics, 1975

Nutritional Status (Gomez Classification)	No. of Children	Percentage
Normal (90% and over)	303	56.9
1st degree malnutrition (75%-89%)	189	35.5
2nd     "             "         (60%-74%)	36	6.8
3rd     "             "         (Under 60%)	4	0.75
Total	535	99.95%

### *The Programmes*

The elimination of protein energy malnutrition in all segments of the population by 1985 could be one of the stated objectives against which the food marketing programmes are planned. Specific programmes might include: (a) development of the physical and technical aspects of the existing system; (b) Food price and subsidy policies; (c) consumer education and (d) introduction of new foods.<sup>8</sup>

#### *(a) Technical and Physical Aspects*

Evidence on food marketing in the Region suggests that heavy post-harvest losses of foodstuffs are sustained due to poor handling, inappropriate transportation and packaging methods, poor storage facilities, and the lack of processing. These losses affect availability and lead to high prices with serious implications for the nutritional status. A programme to improve these facilities would have nutritional benefits directly, and indirectly through creation of employment opportunities. The development of proper market facilities in the urban and rural areas would minimize the probability of pockets of poverty and malnutrition.

*(b) Food Price and Subsidy Policies*

The basic aim of a food price policy is to maintain low and stable food prices for consumers, especially the low income segments of the population. Price control policies treat each individual in the society equally - the high income individual faces the same prices as the low income person. Such a situation accelerates income disparities. Further, under price control policies there is a tendency towards shortages and price control violations with serious nutritional consequences to the poor.

The price and subsidy programme might aim at combining a more liberal price control level with a subsidy programme based on a graduated scale according to income position. The liberal price control levels will ensure that those employed in food distribution do not experience economic hardships. Volume turnover should be taken into account when establishing wholesale and retail price levels. The price increases that would be caused by such a move could be alleviated by coupons for specified products being distributed to consumers according to their income position and family size (the greater the household income, the less the total value of coupons) and location.

The coupons will be used to purchase the specified commodities from retailers, who would in turn use them to procure supplies from wholesalers and finally manufacturers or a Government import agency. The coupons are redeemable from Government within a certain period but only by specific food agencies. Preferably the coupons should not be redeemable on a cash basis but in exchange for supplies of the specified commodities. The establishment of a single import agency for basic foodstuffs and Government participation in farms producing basic commodities locally would facilitate such a system. Funds for the subsidy could be obtained by import duty on undesirable food imports.

The major advantages of such a system are: (a) the prevention of shortages; (b) the fostering of the consumption of highly nutritious foods, especially by low income households through greater subsidy given to the poor. These features of the programme should more than compensate for the disadvantages of administrative difficulties in the implementation.

*(c) Consumer Education*

Tremendous gains could be made through consumer education and information services on food values, quality and prices. Promotional campaigns to increase consumer demand for highly nutritious food items could have great nutritional impact.<sup>9</sup> The idea of relating food cost to nutritive value rather than on a quantity or volume basis is particularly relevant here. The nutrient-cost concept might also be applied in establishing minimum guaranteed prices for various foodstuffs so as to encourage the production of the more nutritious ones. This aspect of the programmes could be linked to the price and subsidy policy.<sup>10</sup>

*(d) New Foods*

West Indians have always been upbraided for their foreign tastes. The fact of the matter, however, is that the presentation of our local foodstuffs is poor, lacks imagination and novelty, and the promotional strategies are weak. There is need for the introduction of new foods based on our traditional food sources such as corn, starchy fruits, roots and tubers and legumes. An important programme for consideration is the production and distribution of a baby weaning food that is nutritious. Such a product, if expertly prepared and presented to consumers, could eliminate the imported 'junk foods'\* from our supermarket shelves as well as malnutrition in children under five years.

---

\*Editor's Note: In this context, 'junk foods' implies commercially bottled baby meals.

## FOOTNOTES

1. Stout, T.T. Performance control of the U.S. Beef Industry.  
In: *Proceedings of the Canadian Agricultural Economics Society Workshop*, 1970: p. 11.
- Kriesberg, M. and Steele, H. *Improving marketing systems in developing countries: an approach to identifying problems and strengthening technical assistance.*  
Foreign Economic Service, USDA and USAID, Washington, D.C.: p. 12.
2. Jones, W.O. *Measuring of effectiveness of agriculture marketing in contributing to economic development: some African examples.* Stanford University Food Research Institute: p. 180, 1970.
3. National Food and Nutrition Survey of Barbados. (PAHO Scientific Publication No. 237), Washington, D.C., 1972.
- National Food and Nutrition Survey of Guyana. (PAHO Scientific Publication No. 323), Washington, D.C., 1976.
4. OECD. *Food Marketing and Economic Growth.* Paris: OECD, 1970, p. 13.
5. In the Antigua context the influence of tourism on total year round population is in the order of 2.5% which is similar to that in Barbados. It is easy to over-emphasize this sector.
6. Rueda-Williamson, R. "Mechanism to formulate and coordinate National Food and Nutrition Policies and Programs". PAHO Document R/CA 2 6/15, 1973.
7. Gueri, M. "Nutritional Status of Young Children in Antigua". (CFNI Mimeograph Document), December 1975.
8. PAG Bulletin, Vol. 5, No. 4, December 1975: pp. 2-9.
9. PAG Bulletin, *op. cit.*, p. 6.
10. McIntosh, C.E. The Nutrient-Cost Concept in Caribbean Food Economics. *Cajanus*, Vol. 8, No. 5, 1975: pp. 309-317.

- 11.\* McIntosh, C.E. and Lim Choy, M. "The Performance of Selected Agricultural Marketing Agencies". University of the West Indies, Department of Agricultural Economics and Farm Management. *Occasional Series No. 11*, 1975.

McIntosh, C.E. "Food Marketing in the Commonwealth Caribbean". PAG Bulletin, Vol. 5, No. 4, December 1975.

"Report on Analysis of Food Prices in Trinidad and Tobago". (CFNI Mimeograph Document).

---

\*This paper extracts heavily from these sources.

## NUTRITION AND THE FUTURE OF MANKIND\*

*by**Moises Behar*

*Malnutrition is primarily due to poverty, a manifestation of social injustice with inadequate distribution of resources and services within and between countries. By limiting the capability of poor people to improve their economical and social status, malnutrition helps to perpetuate this situation. A change in development policies taking more into account the improvement of living conditions of the poor is needed to correct this social problem.*

Johann Peter Frank<sup>1</sup> once asked, "Why is it that a vast amount of illness originates in the very society that men of old inaugurated in order to enjoy a safer life?" Almost two centuries after Frank asked this question in his famous Academy Address, "The People's Misery: Mother of Disease," and in spite of the rapid evolution of society and the development of science and technology, his question is as valid today as it was then.

Ever since the era of the hunter-gatherers in the history of mankind, one of the main reasons why man has organized himself into a society has been to ensure an adequate food supply for all its members. The need for an effective social order became even greater when man learned to domesticate animals and plants in order to obtain food. Progressively, as he was able to produce, preserve, and distribute food more efficiently, larger and more complex societies developed. Originally, most of the time and energy of the working members of these societies was devoted to producing

---

\*Reproduced from *International Journal of Health Services*, Vol. 6, No. 2, 1976. © 1976, Baywood Publishing Co., Inc. Dr. Moises Behar is Chief of the Nutrition Unit, World Health Organization in Geneva, Switzerland.

food, but as food production became more efficient, leaving more free time and allowing for occupational specialization, the arts and sciences developed, which meant still more complex societies. The small groups of hunters evolved into clans, tribes, villages and states, and from these into the large nations with the multinational organizations we know today. In the process, however, one of the original reasons for organized community life - to ensure an adequate food supply for all - seems to have been forgotten.

It is accepted that the fundamental role of any society is to ensure the well-being of all its members, including ensuring adequate nutrition, then the presence of malnutrition to any significant extent must be interpreted as a failure of that society. The problem we are facing today is that the structure of society itself limits the ability of many of its members to satisfy their basic needs, including the need for enough and adequate food, because power and the utilization of resources are concentrated in the hands of the minority. This inequality is well-known, and it can be illustrated by analysing land ownership or income distribution among different sectors of the population. It is also reflected, among other things, in the pattern of food consumption. For instance, it has been estimated that in many developing countries the bottom 20% of the population in terms of income has only half the per capita energy intake of the top 10%. Obviously, both groups suffer from such a disparity: the former group has less than the minimum required for a healthy life, and the latter has too much and suffers from the consequences of over-nutrition.

I would postulate that these disparities in the nutritional status of different socio-economic classes constitute one of the mechanisms which perpetuates social injustice. Low-income groups inevitably consist of uneducated people with low social status. Many of their children die at an early age from disease and malnutrition<sup>2</sup>, which leads to compensation by bearing a larger number of children. Surviving children, living in poor environmental



conditions, will suffer from chronic malnutrition and frequent and severe attacks of infectious diseases; they will have inadequate psycho-social stimulation, including mother-child interaction, and as a result their growth and development will be retarded<sup>3</sup>. They will, therefore, have reduced learning capacities during childhood, and will grow into uneducated adults with very limited opportunities of overcoming their poverty and improving their social status. From then on, their work performance, and, therefore, their earning capacity, will be still further reduced by their chronic states of malnutrition, particularly energy deficiency and nutritional anaemias<sup>4,5</sup>, and they will become the parents of children destined to the same fate. This unfortunate situation is recognized in an old Japanese saying: "If you are poor you will be stupid".

Studies carried out at the Instituto de Nutrición de Centro América y Panamá (INCAP) have shown that children of malnourished mothers are already handicapped from birth, as shown by their low birth weight<sup>6</sup>. The problem could not be completely solved by correcting malnutrition in pregnancy because their low birth weight is related not only to the malnutrition of their mothers during pregnancy, but also to the small size of these mothers, which is in itself a manifestation of their childhood malnutrition<sup>7</sup>. This means that at least two generations may be needed to break this vicious circle of parents living in poverty, who have children in poverty, who will themselves become parents living in poverty.

On the other hand, in the affluent sections of society, well nourished and educated parents have well nourished and healthier children, who will not only have greater opportunities for education but will also derive more benefit from it. This will tend to maintain the existing power structure at the expense of the poorer classes and thus perpetuate social injustice. Seen in this light, malnutrition is not only a consequence of gross inequalities in society, but also a mechanism for maintaining them.

This situation can be compared with the way bees organize their society: an individual larva is selected and specially nurtured to become a queen. In the insect world, however, this is an instinctive means of maintaining a pre-established order; in human beings it is an artificial system created and maintained by a distorted development of society which negates the equal rights of all of its members. The ruling classes have an interest, consciously or unconsciously, in maintaining a system that works so well in their favour, while ignoring the interests and desires of society as a whole.

On the occasions when the privileged members of society have become aware of and concerned by this injustice, their attempts to alleviate it have usually been through welfare projects based on charity. Where malnutrition is concerned, this has taken the form of establishing programmes for treatment and rehabilitation of malnourished children or supplementary feeding programmes for those in greatest need. In isolation - and with the relief orientation usually given to them - these programmes are at best only palliative measures which do not deal with the basic causes of the problem and therefore have no lasting effect. In most cases, on the contrary, they help to maintain the status quo while giving a false impression that the problem is being solved.

At the national level, therefore, malnutrition is one of the consequences of social injustice, and at the same time one of the mechanisms for maintaining it. If the poorer classes of a country were better fed and healthier they may be less inclined to accept their situation and would be able to work harder to overcome it. In the long run this would benefit all the levels of society and the country as a whole.

These great disparities in the resources available to different population groups within countries also exist at the international level between countries, and the same type of social

injustice is involved. Some rich and powerful nations enjoy a large share of the earth's resources at the expense of that of poorer countries, and in dealing with this situation they have taken the same paternalistic attitude as have the powerful groups within countries. The type of aid provided by the rich nations is most frequently also of a charitable nature, palliative and not directed to correcting the fundamental causes of inequality. On the contrary, it is aimed at helping to perpetuate them. In these dealings between rich and poor nations, the privileged minorities of the poor countries frequently work as allies of the dominating countries, acting as their representatives or instruments to exploit local resources for foreign utilization. They, of course, also benefit from this exploitation.

Even when honest international efforts are made to overcome the problems of poverty, malnutrition, and all their associated conditions, mistakes are made because not enough consideration is given to the basic principles I have briefly discussed. Two recent examples will serve to illustrate this point - the results of the first "Development Decade" and of the "Green Revolution".

#### *THE FIRST "DEVELOPMENT DECADE"*

I think all of us are aware that during the 1960s, great international efforts were made to accelerate socio-economic development in the poor nations of the world. The main orientation, however, was toward speeding up economic growth, on the assumption that poor social conditions, including malnutrition, are merely consequences of the low economic capacity of the affected countries. These problems, it was believed, would be automatically resolved by an improvement in the national economy as a whole. The gross national product was, therefore, considered as the main criterion of progress, and inadequate thought was given to ensuring a redistribution of the increased wealth in order to overcome the existing social problems. Experience has shown that the

desired economic growth was achieved in many countries, with some even surpassing the targets set. Unfortunately, most of the additional national income went to the already rich and dominating groups, making them even wealthier than before, and thereby compounding the existing disparities without bringing about significant improvements in the living conditions of the majority of the people - indeed, sometimes there was a deterioration. The same thing was observed at the international level: the rich nations became richer and the poor nations became comparatively poorer. As a result of the growing recognition of the failures of this earlier approach, efforts are now being made to pay more attention in development programmes at the national level to a better distribution of resources, services and opportunities. Similarly, at the international level, a new economic order is being developed.

#### *THE GREEN REVOLUTION*

No one can deny the extraordinary and well-intentioned achievements in agricultural technology which resulted in bigger and better crops of the most important cereals. But, again, no consideration was given to the fact that the new techniques could only be applied efficiently by farmers with adequate capabilities, knowledge and resources. The majority of poor, small farmers living on subsistence agriculture could not benefit from this new technology. Thus, although the Green Revolution was a help to some countries with an insufficient grain production, it did not produce any significant improvement of the economic capacity, food availability, or living conditions of the mass of poor and malnourished people.

It has become increasingly evident, therefore, that national economic growth and technology will have a very limited effect, if any, in improving the living conditions of the majority of the population if they do not operate within an adequate social

structure. On the other hand, even without great economic capacity and advanced technology, better living conditions are possible for the mass of the people if society is organized to this end.

Some of the points I have discussed can be illustrated by what happened to the American Indians after the Spaniards came. Let us take the Mayans of Guatemala as an example. These people had developed a great civilization, and as far as we can tell from available information they had no serious nutritional problems. Their staple foods, as is still the case today, were corn and beans, supplemented by fruit and vegetables, and by meat from wild animals, all of which were abundant. Their agricultural practices would now be considered primitive, but, since they had all the land they wanted, they were able to develop an effective system of land rotation, clearing areas of the forest to be used for cultivation for a few years and then moving to another area, thereby maintaining an ecological balance without damaging the land and obtaining all the food they needed. Children were breast-fed up to about three years of age or even longer, until they were able to consume the regular family diet without any problems.

Then the Spaniards came, conquered the land, subjugated the people, and used all the best land for cash crops, mainly for export. This agricultural pattern has been maintained to the present day, and is indeed increasing in proportion: what were previously large forest areas in the plains are now producing cotton, sugar, coffee and beef for the rich privileged class and for rich countries. The Indians were left with the marginal mountainous land, and this is all they possess today - if they have any land at all. With the practice of subdividing the family property in each generation as it is handed from father to children, each family now has a very small plot which is insufficient to produce enough food to satisfy their minimum needs. They are obliged to exploit it to the maximum, even to the point of cultivating slopes too steep to maintain agriculture. The slopes

are denuded of forest, since the wood is needed as fuel for cooking. This has resulted in a rapid erosion of the land, with many communities having practically no more usable land and thus lacking sufficient food. The whole of Guatemala is suffering from the damage. The erosion in the mountains is resulting in flooding of the rivers in the lowland plains, where serious damage is caused to intensive commercial agriculture.

The Indians should not be blamed for the poor agricultural practices - they have to eat. Their diet is still based on corn and beans, but now in insufficient amounts and with very little to supplement it. Fruit and vegetables find their way to markets in the towns, and there are no more wild animals for meat. Poultry, eggs, milk and milk products are too expensive, particularly for those who have virtually no money and are living on subsistence agriculture. Even if they produce some of these foods themselves, they send them to market to bring in badly needed cash. Beef is one of the most important products of Guatemala. It is produced in the rich lowland plains, but only for export, and for the limited internal market of those who can afford it. The influence and social pressures of the dominating Western culture are forcing mothers to wean their children at an increasingly early age, and since no milk or other adequate substitute for breast milk is available, severe malnutrition is highly prevalent in small children. Moreover, the majority of the population lives in a state of chronic under-nutrition which is self perpetuating, as I indicated earlier.

It can, of course, be argued that the world situation has changed considerably over the centuries, and that there are many new complicating factors present today, among them increasing population pressures in many countries. I do not believe, however, that this invalidates the basic principle I have tried to develop: namely, that malnutrition is primarily a manifestation of social injustice. The examples I have given are only to illustrate some of the mechanisms by which it operates.

I believe it is a good sign that these situations are now recognized. The so-called "food crisis" we have been facing during the past years is indeed a recrudescence of a long standing chronic problem which has been with us for centuries. It is an unfortunate commentary on our social and political systems that it has apparently required current widespread famine to awaken national and international consciousness to the problems of insufficient and inadequate food for large segments of the world's population. Acute hunger, as experienced now by millions of people, is obviously intolerable. At the same time, chronic hunger, or subclinical forms of malnutrition, which affect a much larger proportion of the world's population, should not be underestimated nor should measures to correct it be neglected. It can only be hoped that today's food crisis, together with the energy crisis and the economic crisis, will have positive effects in the long run. They may force the world to reappraise its political, social and economic structures, and force national governments to reassess their purposes and goals. Investments in health, education, nutrition and housing, long considered by conventional economists as giving low or long-term returns, are now being considered for higher priority in many countries. We are confident that this change in strategy, taking account of people as human beings, and not simply as machines or statistics, will lead to better development policies than the previous ones.

A better future for mankind can be foreseen if the presently underdeveloped countries, where malnutrition and poverty - with all their social consequences - are now widespread were to redirect and strengthen their efforts to create better living conditions for all their populations, and if the efforts of the international community were oriented to supporting these programmes. A well nourished population, biologically healthier, as shown by the secular changes observed in many population groups, will be more active socially and better able to contribute effectively to the

progress of the country and the well-being of all its people. At the international level, this should result in a more harmonious understanding and cooperation of all the nations of our small planet. A reduction of the great disparities now existing within and between nations should therefore be of benefit to all peoples.

## FOOTNOTES

1. Frank, J.P. "The people's misery: Mother of disease. Translated from the Latin with an introduction by H.E. Sigerist. *Bull. Hist. Med.*, 9: 81-100, 1941.
2. Puffer, R.P. and Serrano, C.V. *Patterns of Mortality in Childhood*. Pan American Health Organization, Washington, D.C., 1973.
3. Cravioto, J., Hambraeus, L. and Vahlquist, B., Eds. *Early Malnutrition and Mental Development*. Almquist & Wiksell, Stockholm, 1974.
4. Immink, M.D.C., Viteri, F.E. and Torun, B. "Calorie Supplementation, Working Capacity and Productivity in Sugar Cane Cutters". Paper presented at the 10th International Congress of Nutrition, Kyoto, Japan, August 1975.
5. Viteri, F.E. and Torun, B. "Anaemia and physical work capacity". *Clinics in Haematology*, 3: 609-626, 1974.
6. Mata, L.J. et al. "Antenatal Events and Postnatal Growth of Children". Paper presented at Western Hemisphere Nutrition Congress IV, Bal Harbor, Florida, August 1974.
7. Lechtig, A. et al. "Maternal nutrition and fetal growth in developing societies". *Am. J. Dis. Child.*, 129: 434-437, 1975.



## CHANGING THE TRADITIONAL APPROACH TO PRODUCTION AND MARKETING\*

*by*

*Cyril T. Matthew*

Production and Marketing must be recognized as an indivisible package in which each of these components is dispensably inter-dependent. This package, if it is to derive the maximum benefits, must require the producer to first recognize that the objective of production, particularly production for profit, is to satisfy the needs of the consumer. Second, that the function of marketing is made up of specialized services which, at certain levels of production, are most effectively provided through specialist agencies - Marketing Agencies.

### *HISTORICAL OVERVIEW*

For a better appreciation of the need for a change in the production and marketing systems let us review briefly the circumstances during the past fifteen years:

The Banana "Green Gold" Era, bringing with it prosperity to the farmers, merchants and the general economy, encouraged the abandonment of food production. This prosperity seems to have influenced adversely policies with regard to food production, for it is very apparent that little attention was paid to research and production programmes for locally grown foods and vegetables. Importation of food was implicitly being encouraged.

---

\*Reproduced from *The Voice* (Marketing Board Supplement), St. Lucia, 22 June 1977. Mr. Matthew is Chief Agricultural Officer in the Government of St. Lucia.

The problem was compounded by the fact that St. Lucian farmers are traditionally not oriented to intensive systems of production as found in food and vegetable production, but to plantation crops. The latter are not demanding either in day-to-day attention or critical short interval operations such as regular bi-weekly spraying for pest control. The high perishability of these crops and quality aspects are still not fully appreciated.

Thus, when the effects of the world food crisis and inflation were being experienced, our farmers, with only a year or so of exposure to the changes in technical requirements, found themselves generally incapable of making the desired contribution to effectively meet the sudden increase in demand for food at competitive prices.

A combination of bold attempts and spontaneous responses from some farmers resulted in the production of surpluses of very perishable commodities at a time when storage, shipping and distribution were inadequate. Many farmers were faced with losses because of inadequate knowledge and experience in the growing and management of these crops.

Deficiencies in storage and distribution services were apparent. The Government Institution - The St. Lucia Marketing Board - which promised to provide adequate solutions to the farmers' marketing problems was handicapped, particularly because of unplanned production on one hand and unplanned marketing on the other. The result of this has been dissatisfaction at the farmer level for losses sustained because of marketing problems; disappointment to the consumer for not being able to purchase food at reasonable prices; and disappointment from the Extension Officers who work with the farmer and are on hand to observe the farmers' reactions. The SLMB itself, although endeavouring to assist the farmer and consumer, was unable to attain these objectives.

One of the consequences of these circumstances is that the SIMB has been unable to make its anticipated contribution in the area of agricultural marketing.

In 1975/76 it was estimated that the SIMB accounted for only 15-20% of sales of locally produced foods and vegetables. The Central Markets were still the major trading institutions.

The reorganization of the Board, which has been in progress since October 1976, has been accomplished with due regard to all these aspirations and shortcomings.

#### *ROLE OF LOCAL MARKETING AGENCIES*

What must we expect of our local Marketing Agencies? First of all - What is Marketing?

Briefly, marketing may be considered as the services involved in getting goods from the point of production to the point of consumption, and which may be used to alter the form, time and place of presentation of the goods to be consumed. Thus, it is concerned with the buying and selling, transportation, grading, packing or packaging, and storage of the product, as well as making the consumer aware of the existence of the product in terms of place, quantity, price and quality. The range of services may also extend to the processing of surpluses and by-products, and to credit arrangements to producers.

Institutions in St. Lucia which are engaged in providing these services contribute in varying degrees:

- The Central Market consisting of retailer speculators. Farmers' wives are engaged in retailing at the Central Markets in Castries City, towns and villages especially on Fridays and Saturdays.
- The middlemen and hucksters who are concerned mainly with wholesaling, although some retailing is done.

- The small localized street-side retailers who appear to make a useful contribution in their small localities.
- The St. Lucia Marketing Board - which provides the widest range of services and is best equipped legally and physically to meet the needs of a developing agricultural sector.

#### *INDISPENSABILITY OF AN EFFICIENT AND EFFECTIVE AGRICULTURAL MARKETING SERVICE*

The organization of this service must have a biased orientation towards the interest of the producer, since this is considered to be the most effective means by which the local consumer can hope for regular supplies at competitive prices in the future.

The contribution of agriculture to total employment was 65% and 71% in 1963 and 1974 respectively.

About 75% of persons employed in agriculture (1973) are dependent on farm operators. The corresponding figure for 1961 was 46%.

The less than 10 acre farmer group has shown that when provided with efficient and reliable marketing services they can make a significant contribution. For example, it is estimated that they account for 56-60% of banana production and 90% of acreage under coconuts.

It is estimated that producers of this group account for 80-90% of our local food and vegetable production most of which is unplanned.

Table 1: Statistics on Holdings of Less than 10 Acres

Persons Employed in Agriculture		Persons Dependent of Farm Operators		Holdings in Agriculture				Self Employed Farmers			
No.	% of Total	No.	% of Total	Holdings		Acreage		Holdings		Acreage	
				No.	%	No.	%	No.	%	No.	%
27,657	84	23,235	92	10,025	94	17,040	41	4672	89	11,653	43

SOURCE: Agricultural Statistics - Census Data 1973/74, Ministry of Agriculture, St. Lucia (unpublished)

At present this class is the one most seriously affected by the inadequacies in the marketing services. Inattention to their economic and social needs must constitute an area of great weakness in the social and economic structure of the State.

#### *CHANGING THE TRADITIONAL APPROACH*

It appears logical that for effectiveness, the production effort must start with a new modern approach to marketing.

In the reorganization of the Board serious consideration was given to economic viability. Emphasis was, therefore, placed on attaining a level of sales sufficient to generate an acceptable level of profit for providing additional or expanded services to the producers; for absorbing the high risks associated with trading in perishables; and possibly, as an incentive to farmers.

The Marketing Board is expected to operate along commercial lines, guided by Government policies, to meet the marketing needs of local producers. To achieve these objectives, the Board's operations should best be guided by approaches and techniques commonly used in industry and commerce. In this respect, some of the basic steps now being implemented by the Board are as follows:

### 1. *Demand and Sales Forecasting for Local and Overseas Markets*

Goods once produced should be sold. Goods which cannot be sold now or in the future should not be produced.

Forecasting demand becomes a vital step in the planning process of the SLMB and will form the basis for the development of the Board's operational budgets which will provide an informed insight of future circumstances. Of far greater significance, however, is the fact that farmers would also be better informed as to the *WHAT* and *WHEN* aspects of production and they will consequently be better able to decide on *HOW* to make the best use of their limited resources.

Let us not be mistaken in believing that surpluses will be totally eliminated. This is very unlikely. Surpluses, however, will be minimized and, in addition, when they occur the Management would be better able to dispose of the produce.

### 2. *Desired Sales Volume and Distribution Outlets*

Organizations like the Marketing Board are generally faced with high overheads arising from high capital expenditure in buildings, storage, processing, transportation, handling equipment, high salary bills, etc. With such high overheads, it becomes imperative to achieve a high throughput or sales volume if high margins to meet overhead and direct expenses are to be avoided.

The sales of the SLMB locally have been mainly by way of its retail outlet, as the following statistics reveal:

Table 2: Sales by Distribution Channels

	Total	Retail	Wholesale	Export
1973	\$355,000	42%	10%	48%
1974	472,000	40%	13%	47%
1975	410,000	27%	9%	64%

Exports have been mainly green ginger. While ginger is likely to maintain its position, its relative contribution is expected to be reduced through the promotion of crops such as pumpkins, sweet potatoes, tannias, yams, plantains and macambou, peas and beans, dasheen and tomatoes.

Consequently, the Board in its policy statement places emphasis on wholesale distribution, be it local or overseas. A throughput of six million pounds is being planned as compared with the present two million pounds. This substantial increase is of particular interest to our producers since it means, not only an increase in the production of the regular food items being produced, but also the chances of surplus problems being considerably reduced.

The significance of a high throughput must also be considered in relation to the scale of production (and therefore cost of production) and selling prices. With our small population and its relatively low buying power, the frequency of gluts would continue to frustrate all positive efforts if planning is not attended to seriously. Thus, the exploitation of all export opportunities, and the vigorous search for possible outlets, are policy decisions needed to be effectively implemented if the objectives of import substitution, competitive food prices and minimizing surpluses are to be attained.

### 3. *Quality and Pricing*

Goods are produced for consumption. It is the consumer who decides whether the quality of a food justifies its price. Consequently, the relationship between quality and price must be adequately realized through grading standards - an aspect in which the SLMB has established a good reputation here and abroad.

### 4. *Creating Customer Awareness of Available Food Items*

The SLMB now has a special sales promotion section which is responsible for the sales. A close contact is expected between that section and the major distribution outlets locally and overseas. Producers as well as consumers can anticipate a more liberal use of the mass media in this respect.

### 5. *Participating Incentives - (Bonuses)*

One of the serious shortcomings of normal commercial organizations is the absence of participation by primary producers in trade profits. The Board, in order to encourage greater cooperation from producers, has decided as a matter of policy to distribute where possible a portion of profits as participation bonuses to producers. In addition, the Board has also recommended a change in the present legislation to make distribution of profits to farmers legally possible.

### 6. *Farm Gate and Field Purchases*

Much more emphasis is being placed on this aspect. First, because the Board wishes to remove the necessity for the producers or wives to come to Castries or towns to sell small quantities of produce. Second, farm gate or field buying will obviate the wasteful transportation of inferior produce to Castries and other towns. Third, the education of farmers in aspects of quality will be facilitated while, in addition, direct contact and dissemination of information will be made possible. Fourth, the inadequacy of space at the Depot at Castries and Vieux Fort will be made less acute.



7. The Board's policies also include certain important services which it is at present unable to provide because of financial constraints. Perhaps the most important of these is the provision of certain inputs, essential for the profitable production of the crops being promoted. In addition, in order to assist farmers in taking full advantage of special credit facilities, the Board has agreed in principle, to assist the Lending Agencies in collecting loan repayments where crops produced are sold to the SLMB.

The change in production is expected to follow quite naturally from the foregoing improvements to the Marketing Services.

#### *PLANNED PRODUCTION*

Production will be planned and related closely to the anticipated sales thus the SLMB will now in certain instances cause actual items to be produced. Reliance on unplanned production will be avoided. The Board would be expected to apply its resources in assisting farmers to meet its overall production target and, in particular, in fostering the production of special crops.

Planned production is perhaps the most effective means of removing drastic fluctuations in supplies. This could best be achieved through the combined efforts of small and large producers. The large producers may use their irrigation facilities while concentrating on 'off-season' production. They would be expected to scale down on production levels during the 'in-season' to allow the small producer the opportunity to sell his crop (to the SLMB) at fair prices. The SLMB would be required to make adequate arrangements for regular supplies if it is to maintain its position as a reliable supplier to supermarkets and hotels. As a last resort, the Board may find it necessary to import produce in order to meet this commitment. If this has to be resorted to, it should be viewed in the light that the transaction is being done to maintain an undisturbed customer-seller relationship between the Board and

distribution outlets. The alternative of leaving the established customer inadequately supplied would not be in the interest of the farmer in the immediate future and in the long term.

#### *TECHNICAL EDUCATION AND MOTIVATION*

The next stage is to provide the producer with technical advice for the production of the crops. The Technical Officers of the Department of Agriculture are already preparing special practical, technical bulletins (to be accompanied by visual aids) for the crops identified by the Marketing Board. The extension officer will now rightly be concerned with assisting the farmer in production aspects and will be reasonably assured that the produce will be purchased.

It is anticipated that this approach will also facilitate the small producers' access to special credit arrangements through the Agricultural and Industrial Bank or Barclays Bank Small Farmer Credit Scheme.

One of the problems which has been engaging the attention of agricultural advisory personnel is the tendency for farmers to produce several crops inefficiently on numerous small plots.

Unless the small producer, through advice and encouragement, accepts the idea of reducing the number of crops and thereby producing in larger units, he will continue to overlook the feasibility of large volumes at low price.

The extension personnel are required to influence small producers along these lines as well as to encourage farmers with the aptitude and resources for food crop production to become specialist year-round producers.

### *MARKETING INTELLIGENCE*

Within the next few weeks an agricultural statistical unit is expected to begin operations. One of the functions of this unit will be to assist with forecasting production levels by means of information from extension officers and special field personnel. It is anticipated that the information will provide the Board with guidelines for the better monitoring of the local supply position.

### *PUBLIC AND CONSUMER UNDERSTANDING AND COOPERATION*

It should be fairly evident from the foregoing that the SLMB is the only organization involved with marketing of locally grown produce with the potential to provide the wide range of marketing services necessary to meet the farmers' needs now and in the future. It should be evident that the Marketing Board, although reorganized on a commercial basis, will inevitably, significantly contribute to our social development.

The reorganized Board has, with assistance, been able to resolve some important organizational problems. Its ability to progress rapidly along its present planned course and to carry out its role effectively is dependent, not only on its own initiative and efforts but also, on the cooperation, participation and understanding from producers, customers, extension officers and the general public - that of Government and Ministries concerned being assumed. If these come to pass, then one can be reasonably assured that our farmers will make a meaningful contribution to improving the quality of life to the people of St. Lucia. ▲

## NEWSPAPER CLIPPINGS

### HELP FOR ST. LUCIA MARKETING BOARD

*From The Voice, St. Lucia, 22 June 1977*

The British Development Division and the Caribbean Development Bank, both located in Barbados, are to assist the St. Lucia Marketing Board in its expansion programme.

The BDD had indicated its willingness to fund a modest extension to the Board's depot in Castries as well as to provide certain equipment which would update the Board's operations and streamline its storage, packing and retail functions.

The Caribbean Development Bank is at present actively engaged in supervising and coordinating a long term marketing study throughout the LDCs. Recently, a marketing adviser has been assigned to the ECCM\* to work on export promotion of agricultural production in regional and extra-regional markets. Both these exercises are intended to be complementary to each other and to assist the various Marketing Boards in utilizing these outlets to the best advantage. ▲

### CARICOM TO DEVELOP COMMUNICATION SYSTEM IN SUPPORT OF REGIONAL FOOD PLAN

*From The Daily Gleaner, Jamaica, 26 September 1977*

The Caribbean Community Secretariat has received a grant from the Canadian Government for the preliminary phase of a project designed to develop an effective communication system for the promotion of specific regional projects, in particular the Regional Food Plan.

---

\*Eastern Caribbean Common Market

The grant will assist the CARICOM Secretariat to undertake a detailed study of the most effective means of ensuring a wider and better understanding by all persons involved in the projects, particularly the Regional Food Plan, of their individual and collective roles in achieving the regional integration objectives through these projects. Such persons will include farmers, consumers and decision-makers.

The study will also be concerned with finding ways of assisting and speeding up the pace of rural development in the Less Developed Countries in the Caribbean.

The CARICOM Secretariat and the United Nations Educational Scientific and Cultural Organization are among those agencies which will carry out the study. ▲

#### GUYANA TO GO METRIC

*From The Daily Gleaner, Jamaica, 3 October 1977*

Guyana is now preparing to go metric and is in the course of drafting legislation as a result of a report prepared by a consultant on metric management.

In his report the consultant recommended that 'Metric Enabling and Imperial Cut-Off Legislation' should be enacted before the end of this year to pave the way for the completion of the change over from the imperial system of measurement to the metric system by 1982.

According to his recommendation, while the legislation should include the mandatory elimination of the old imperial units within Guyana by the end of 1981, there should also be provision for earlier cut-off dates on a sector by sector or industry by industry basis. ▲

## BARBADOS GRADUALLY GOING METRIC

*From the Sunday Gleaner, Jamaica, 2 October 1977*

Barbados is gradually shifting away from the imperial system of weights and measures to the now almost universally accepted metric system.

According to officials here, it is hoped that the transition would be complete by May 1978, bringing Barbados in line with most of its main trading partners. Already legislation has been enacted making the metric system, along with the imperial, the legal system of weights and measures for the country. Officials expect that the twin system would be phased out by May of 1979, leaving the metric system as the only legal system of weights and measures here.

The decision to go metric was taken about four years ago, and a metrication board was established shortly afterwards to spearhead the change-over. The board operates within the ambit of the Barbados National Standards Institution (BNSI) - the organization which will be responsible for the change.

The metric system is already being utilized in many practical situations:

Housewives no longer buy their milk from the local dairy by the pint. For some time now quantities of milk have been expressed in litres.

Many of the canned and packaged goods now imported from sources in Europe and North America carry both the imperial and the metric system on their labels.

In advancing towards full implementation of the metric system, Barbados is very much keeping in step with and in some ways ahead of its close neighbours - Jamaica, Guyana, Trinidad and Tobago - all of whom have already decided to go metric.

*Editor's Note: See Cajanus, Vol. 10, No. 1 pp. 7-11 for an explanation of the metric system.*

#### BLACK BEAN EXPERIMENT BEING PREPARED

*From The Jamaica Daily News, 22 September 1977*

Some 300 pounds of black beans are to be brought in from Venezuela, for trial planting on seven experimental plots throughout Jamaica.

The observation was made that Venezuela's terrain, which is highly suitable for black bean cultivation, was similar to that of Jamaica. The areas chosen for the experiment were suitable for kidney beans and it was felt that black beans would also be successfully grown in these areas.

#### SCHOOL OF NURSING ESTABLISHED

*From the Daily Gleaner, Jamaica, 21 October 1977*

St. Vincent has a new School of Nursing which was opened recently at premises about two miles outside Kingstown.

The Pan American Health Organization/World Health Organization regional programme has helped the authorities to acquire some US\$7,000 worth of audiovisual equipment. A Peace Corps volunteer pharmacist has been able to solicit donations of US\$1,000 for laboratory equipment.

Although the school presently caters for nurses only, there are plans to upgrade it to a school of health sciences. Then it will also provide training for public health officers, paramedics, family planning workers, laboratory technicians and pharmacists.

Sixty-one first-year students are now enrolled in a three-year training programme leading to a registered nurse qualification, and there are another twenty completing their final year in addition to thirty nursing assistants. ▲

#### FURTHER WORK ON PRESERVES

*From The Sunday Advocate News, Barbados, 27 November 1977*

The Experimental Food Processing Factory (EFPF) situated at Wildey in St. Michael, Barbados, has been taking a closer look at canning and freezing of a wide range of vegetables, fruits and root crops.

Some of the crops are beans, carrots, onions, pumpkin, sweet potato, cassava, seville orange, paw-paw and cherries.

During July-August this year 12 varieties of beans grown by the vegetable agronomist at Sayes Court Agricultural Station in Christ Church were being compared for keeping qualities. The beans were blanched and frozen, washed and placed in cold storage. Several of the varieties will be used in soups, salads, cocktails and casseroles.

Many of the products which were canned in June and July this year are being closely monitored by analysis. Likewise, storeroom temperatures at various levels for yam flakes and other dehydrated food products are being or will be monitored.



In late September, the EFPP was involved in a processing project for 55,600 lbs of un-marketable yams. The yams, supplied by the Barbados Marketing Corporation produced 4,050 lbs of yam flake.

Other specific projects will include research on paw-paw slices, breakfast flakes (dehydrated) and candied products, and the production of composite flours and miscellaneous vegetables will also be investigated.

Research continues at EFPP to find the best methods of preparing indigenous food which should be both cheap and nutritious. ▲

#### CAJANAQUOTE

*"During stable times planners tend to inherit the earth. They can count on predictable weather and good crops year after year, allowing them to plan for welfare programmes, wars or whatever. Unstable times are hard times. You see them throughout history. The rules change. People with food tend to keep it for themselves. The others become very hard to compromise with when their babies are starving. We have now entered one of those rough, tough periods."*

- Iben Browning  
Climatologist  
In "INTERCOM"

## NEWS BRIEFS

### ST. LUCIA NUTRITION AUXILIARIES AID FIGHT AGAINST MALNUTRITION

The St. Lucia nutrition aide programme will be expanded by the addition of twenty-four community health aides and, it is assumed, will eventually be absorbed into the community health aide programme. ▲

### NEW BOOKS ON NUTRITION FOR CHILDREN PUBLISHED

Three new books on nutrition for children have been recently published by the Scientific Research Council (SRC), Jamaica.

The books, intended for use as supplementary readers, aim at helping young children recognize good eating habits.

In introducing this series, the SRC has recognized the need for young children to understand the importance of sound nutritional habits and the foods needed to maintain a satisfactory diet. They help to fulfil a vital need for food and nutrition-related reading material, particularly for young children, which was a prime motivating factor in the production of the books.

These books are entitled "Farmer Brown", "Foods we eat" and "Jimmy Whitestrong", and are priced at 10¢ each. A set of rhymes and jingles on nutrition themes has also been developed and are issued in conjunction with the booklets, which are available from the Scientific Research Council, in Kingston, Jamaica.

The books have been very enthusiastically received by the Jamaican education community and their popularity has prompted an investigation of the possibility of wider distribution to embrace other English-speaking Caribbean countries. ▲

#### FIRST DAY CARE CENTRE AT GOVERNMENT MINISTRY OPENED

A Day Care Centre has been opened at the Jamaican Ministry of Social Security. Situated on the ground floor of the building, the Centre consists of two bedrooms, one bathroom, a fully equipped kitchen and a large play and work area.

Funds to establish the Centre were raised by the Ministry staff through a series of fund-raising activities. It is mainly a self-supporting venture and proceeds from weekly film shows will help supply the Centre's needs.

At present, sixteen children attend the Centre daily, and are cared for by four nursery attendants and one supervisor. ▲

#### HIGGLERS TO BE INTEGRATED INTO JAMAICAN MARKETING SYSTEM

The Agricultural Marketing Corporation of Jamaica (AMC) expects to begin integrating higgler into its marketing system by a system of registration for higgler at all AMC branches throughout Jamaica. Higgler will register at the branch most convenient to them and will then be authorized to purchase goods from the AMC at wholesale prices. The new system is intended to benefit farmers, higgler and consumers. The farmer will benefit because the AMC buys at regular rates for ready

cash whether the market is good or bad. The higgler will be provided with one central location at which to purchase goods and the consumer will be able to get foodstuffs at reasonable prices. ▲

### SOYA BEAN SEMINAR HELD

A two-day Seminar on soya bean supplementation was held at the Bureau of Standards, Jamaica from 29-30 September 1977. The Seminar was sponsored by Jamaica Nutrition Holdings and the Nutrition Advisory Council.

Topics discussed included the use of oilseeds in infant feeding; the nutritional considerations in the development of an infant cereal for Jamaica; protein and energy requirements in man; adequacy of protein intakes among Jamaican families; and fortification of cereal products.

Participants included representatives from the Tropical Metabolism Research Unit (TMRU) UWI, the Food Technology Division of the Jamaica Industrial Development Corporation, the Nutrition Department of the Ministry of Health and Environmental Control, CFNI and other agencies concerned with food and nutrition. During the Seminar, the discussion became quite heated as the subject is controversial and involves special interests.

Proceedings of this Seminar will be published in a forthcoming issue of "Cajanus". ▲

GREEN GUNGO (PIGEON) PEAS MAY NOW BE  
AVAILABLE THROUGHOUT YEAR

The Faculty of Agriculture at the UWI, Mona Campus in Jamaica, has been involved in gungo pea breeding research for almost fifteen years.\* The first breakthrough came with the breeding of a dwarf short-day flowering variety. Recently, however, *dwarf day-length-neutral* cultivars (U.W.17 and U.W.26) have been successfully developed for use in Jamaica.

It is hoped that these will replace the local tall varieties of gungo pea which are all day-length sensitive - i.e. those which only flower during the short days. This makes cropping possible, at the most only from November to April, and more usually from December to February. However, green gungo peas will soon be available throughout the year, mainly because of the two main characteristics of U.W.17 and U.W.26:

- (1) The ability of being reaped as green peas within 100 days after planting, despite time of planting.
- (2) Compact, dwarf growth habit (approx. 1 metre tall), despite time of planting.

While management and other constraints may still govern particular times of planting, the genetic constraint has now been removed and the availability of fresh green gungo peas at different times of the year rather than at one season only will soon be a possibility. These varieties of gungo pea are not yet ready for distribution to farmers, mainly because of insufficient seeds. Farmers will be advised when they will be ready for general distribution.

*\*Editor's Note: The gungo, or congo pea is more widely known as the pigeon pea [Cajanus cajan]. It is so nutritious, versatile and well-known in the Region that we have named this Bi-monthly after it.*

## EXTENSIVE REORGANIZATION OF JAMAICAN HEALTH SERVICES PLANNED

Health services in Jamaica are to be extensively reorganized as part of a five-year health plan in which the emphasis will be on establishing an effective system for the delivery of primary health care throughout the island.

The concept behind the reorganization is to develop a comprehensive national health system that incorporates both private and public sectors and provides equal access to a basic minimum level of health care for all sectors of the population.

Emphasis on health services in Jamaica have been traditionally hospital-based leading to over-crowding in hospitals and other constraints imposed upon those seeking medical attention.

The new system of Primary Health Care will include all services - preventive, curative, promotional and rehabilitative - that are provided at the community level and fashioned around the life patterns of the community. Under this system, health workers develop a multi-disciplinary approach to health problems where all workers are partners with each having an understanding of the other's role. Under this system also, no health worker should perform tasks that can be done by a lesser trained member of the health team, thereby allowing for graduated levels of skills to be utilized in dealing with progressively more complex problems.

Primary Health Care will be brought to the people mainly through four grades of Health Centres, which are being structured out of the present system of haphazard and fragmented distribution of health services.

The Ministry of Health and Environmental Control is to work closely with the National Planning Agency and the Ministries of Youth, Education, Agriculture, Local Government, and other agencies at the community level in identifying problems of the community and assisting in solving them, also to carry out a health education programme. ▲

#### ADVANCED FOOD PRESERVATION COURSES HELD

The Food Promotion Officer of the Barbados Agricultural Development Corporation held two 11-week Advanced Food Preservation Courses last year. The courses were co-sponsored by the Barbados Agricultural Development Corporation and the Extra Mural Department of the University of the West Indies and conducted on Saturdays at the Garrison Secondary School.

The students who attended these courses were drawn from a varied cross-section of the community and displayed keen interest at the sessions. ▲

#### FIRST SEMINAR TO REVIEW FOOD AND NUTRITION POLICY

Representatives from a wide range of Government and public sector organizations concerned with food and nutrition met in Jamaica on 16 and 17 November 1977 for a systematic and thorough review and evaluation of the implementation of the Food and Nutrition Policy for Jamaica.

This Policy, developed in 1974 by the Nutrition Advisory Council with the support of CFNI, deals with issues such as the nutritional status of the population and the factors which

determine it, and focuses on three main targets intended to result in nutritional improvement. These include the availability by 1980 of adequate quantities of essential commodities, annual increases in the proportion of energy and protein requirements supplied from local production and the elimination of malnutrition and anaemia in pregnant and lactating women and in children from birth to five years of age. ▲

#### WORKSHOP FOR HEALTH EDUCATION OFFICERS

Health Education Officers in Jamaica participated in a one-week workshop from 14 - 18 November 1977 which was part of a training programme established by the Ministry of Health and Environmental Control to upgrade the skills of its officers and to prepare them for more intensive involvement in the delivery of primary health care.

The major objective of the workshop was to develop additional skills in planning, communication and the human relations aspects of training to help the health team in the development of parish training programmes; examine the dynamics of community participation in promoting health and population education programmes; develop understanding of the roles and functions of health committees; and develop guidelines for the formation and continuity of health committees as an approach to community involvement. ▲



## GUYANA NUTRITIONIST ON FELLOWSHIP IN JAMAICA

Miss Julia Mubi, Public Health Nutritionist in the Ministry of Health, Guyana, visited Jamaica on 21 November 1977 under the auspices of CFNI to participate in a one-month fellowship programme designed to assist her in the organization of nutrition and dietetic services.

During this period, Miss Mubi was assigned to the Dietary Department and Diabetic Clinic of the University Hospital of the West Indies, the Nutrition Department and Bureau of Health Education of the Ministry of Health and Environmental Control and to CFNI and also visited a number of hospitals and clinics to observe the implementation of community health and nutrition programmes. Miss Mubi was also her country's representative at the 11th Meeting of the Advisory Committee on Policy to CFNI, held in Antigua from 28 November - 1 December 1977. ▲

NEW APPOINTMENT REFLECTS GREATER PAHO/CFNI  
COLLABORATION IN AREA

Dr. Miguel Gueri, CFNI Medical Nutritionist, who was recently transferred from the CFNI Trinidad Centre to Jamaica, has been appointed PAHO Nutrition Adviser. In his new position, Dr. Gueri, who will remain within the CFNI staff structure, will provide PAHO cooperation in the English-speaking Caribbean countries and Surinam. He will be again based at the CFNI Trinidad Centre where he will be Officer-in-Charge with administrative and technical responsibilities for the centre on behalf of CFNI Director, Dr. Michael Gurney. ▲

### 11th CFNI POLICY COMMITTEE MEETING HELD IN ANTIGUA

Antigua was host last year to the 11th Meeting of the Advisory Committee on Policy to CFNI which was held from 28 November - 1 December 1977. Participants attending this meeting represented the Ministries of Health and/or Agriculture in Antigua, Belize, Jamaica, Guyana, St. Lucia (representing the LDCs) and Trinidad and Tobago on behalf of all the countries of the English-speaking Caribbean. Also present were delegates from the UWI, PAHO, UNICEF, UNDP and members of CFNI staff. ▲

### PROPOSED NEW CURRICULUM FOR M.B., B.S. COURSE

Discussions are now taking place on a new curriculum for Medical Education at the University of the West Indies which is expected to come into effect this year (1978-79).

In April 1977, aspects of the proposed curriculum were discussed at a Medical Conference attended by regional Medical, Technical and Scientific officers in Belize. It was also discussed at a two-day workshop held from 27 - 29 May 1977 in Jamaica and was on the agenda of the Caribbean Health Ministers Conference held in St. Kitts from 22 June to 10 July 1977.

In its study and drafting of the proposed curriculum, the Medical Faculty is being guided to a great extent by the paper prepared by the CARICOM Secretariat last year on Priority Health Issues in the Caribbean. Medical students will be exposed from the first week of their training to the problems of people and patients with whom they will come into contact. Much more emphasis will be placed on community medicine in the proposed course of study. ▲

FAMILY PLANNING INTEGRATED INTO ST. LUCIA  
NUTRITION PROGRAMME

St. Lucia's Family Planning Association recently participated in a Family Life Education Seminar organized by the government's Nutrition Department to brief nutrition workers on family life education so that they could relate the two fields.

One aim of the seminar was to equip the nutrition workers with information they could give to families they encounter in the course of their work. ▲

CAJANAQUOTE

*"The under-privileged sectors of our society living under adverse conditions of illiteracy, underemployment, lethargy, dejection, frustration and general misery demand and merit our concern and urgent attention. Their plight demands the search for and discovery of an immediate solution. Relief from misery, yes. But even more vital a permanent solution to their frustration and anguish. They require inspiration to live and the energy and strength to pursue life."*

- Hon. Vernon H. Courtenay  
Ambassador of Belize to  
CARICOM

## BOOK REVIEW

### FOOD SCIENCE

(2nd Edition). Gordon, G. et al. Oxford, Pergamon, 1977  
(Pergamon International Library of Science, Technology,  
Engineering and Social Studies). US\$14.50 (hardcover)  
US\$8.50 (paperback).

Written in simple terms, and enlivened by humorous comments and anecdotes, this readable book would be an excellent reference for the layman who needs simple answers to basic questions about the science of food. It is also recommended for students of dietetics and home economics as well as professionals in the field of food and nutrition. The general consumer who needs a better understanding of foods will find the topics discussed relevant and informative, and the style easy and unencumbered. Topics such as components of food and drink, the functions of food and what happens after food is eaten are included in the contents. An interesting chapter, entitled "From farm to table" describes the conversion of raw food into a form suitable for eating, using foods like bread, margarine and jam to illustrate different methods of processing.

Food poisoning, food spoilage and the changes which take place in foods involving microorganisms are also discussed, and this chapter includes methods of preserving foods such as pasteurization, freezing, dehydration, canning and bottling.

The chapter on changes in food during storage and preparation focuses on those chemical and physical changes which occur during the storage and preparation of food other than those that are primarily microbiological in nature.

Useful information on water, soft drinks, mildly stimulating beverages such as tea, coffee, cocoa and cola drinks and alcoholic beverages such as beer, wine, spirits and liqueurs is presented in the chapter on Drink.

The importance of flavour, texture and colour in determining food acceptability is also stressed. The chapter on Chemicals provides current information on a variety of chemicals described by the authors as "unintentional contaminants and intentional additives".

Particularly relevant in a Caribbean context is the final chapter on Fads, Fallacies and the Future which attempts to separate the illusions from the realities of nutrition. It will be invaluable to nutritionists and dietitians attempting to change many socio-cultural, religious and traditional myths and superstitions about food, which can hinder the full acceptance of nutrition messages.

For those who need further information on the different topics discussed in this book, the authors have compiled useful lists of references which appear at the end of each chapter.

Manuelita Zephirin

▲

#### CAJANAQUOTE

*"Women are interesting to paediatricians, but very seldom to economists and nutritionists."*

- Dr. Menche Barth Eide  
Department of Nutrition Sciences  
University of Oslo, Norway

Quoted at The United Nations  
University  
Consultative Meeting  
Stockholm, Sweden  
17-18 March 1977

## FROM THE EDITOR

OVER TO YOU!

*In April 1976 a U.S. based infant formula manufacturing company was sued because it was alleged to have made "false and misleading" statements to stockholders about the marketing of its formulas in developing areas. The plaintiff, who owned 1,000 shares of Company stock, was a group of Roman Catholic nuns who believed that the Company's marketing of infant formula in certain Third World countries contributed to malnutrition, since the mothers rarely had the education or the facilities to prepare the formulas properly.*

*Recently the suit was withdrawn following a pledge by the Company to meet with the Sisters to discuss "...ongoing solutions to the problems in the Third World of bottle feeding..." The Company will also send stockholders a report prepared by the Sisters and their representatives, containing affidavits from numerous persons involved in infant nutrition in developing areas, attesting to the harmful effects of bottle feeding.*

*The settlement of this lawsuit proves that a determined group of persons with professional or personal interest in the reduction of bottle feeding can make a significant impact on the marketing practices of the milk companies operating in areas such as the Caribbean. We also believe that disclosure of any of the illegal sales and promotion activities of these companies will give interested persons and agencies the opportunity of dealing constructively with the "bottle-baby" problem in their countries. It will also enable them to assess their own views, based on accurate information, and to work, more directly and less in a vacuum, towards a realistic solution to the problem.*

Each of us has a part to play. We read on page 67 of a "well-known nutritionist" (incidentally a CFNI staff-member) who challenged the statement made by a local company about its marketing practices. Are milk companies operating in your countries? Do you believe that it is possible to promote or sell infant formulas in certain areas without product misuse, malnutrition or other harmful effects occurring? Keen observation and cooperative action can help control the promotion and sale of infant formulas in our communities and can be an important step towards the resurgence of breast-feeding and the ultimate eradication of malnutrition.

#### THE EDITOR



Have you ever heard of these plants?

1. ARRACACHA (Arracacia xanthorrhiza Bancroft)  
Family: Umbelliferae
2. CHAYA (Cnidocolus chayamansa McVaugh) and (Cnidocolus aconitifolius)  
Family: Euphorbiaceae
3. MANGOSTEEN (Garcinia mangostana L.)  
Family: Guttiferae
4. UVILLA (Pourouma cecropiaefolia Mart.)  
Family: Moraceae
5. TAMARUGO (Prosopis tamarugo Phil.)  
Family: Leguminosae
6. GUAR (Cyanopsis tetragonoloba [L.] Taub.)  
Family: Leguminosae
7. RAMIE (Boehmeria nivea [L.] Gaud.)  
Family: Urticaceae

See page 70 for answers.

## FROM OUR READERS

THE EDITOR, CAJANUS

Dear Sir/Madam:

I read with interest the letter from Rose Willock which appeared in Vol. 10, No. 4 of *Cajanus*. I totally agree that food preparation hints are needed, especially in the area of meatless meals. I also would appreciate recipes for main dish meatless meals.

Elaine Wallace  
AGROLAB  
Mobile Home Economics Unit  
Kingstown, St. Vincent

Thank you for my copy of *Cajanus* No. 4. My multimix dish based on the foodstuffs shown in the stall is:

Curried bodi peas and pumpkin (with beef)

Boiled dasheen, and

Steamed patchoi.

I am looking forward for the next issue.

Sylvia Barrimond  
Port of Spain, Trinidad

*Editor's Note: Recipes for the dishes cited were subsequently sent.*

▲



## READERS' EVALUATION OF CAJANUS

Our current mailing list now exceeds 3,000. Unfortunately our present resources will not permit our free distribution to go beyond 2,000. We are therefore surveying the mailing list to determine the following:

1. How useful *Cajanus* is to its readers.
2. Whether or not readers could willingly share copies to reduce mailings to the same address.
3. Readers whose names can be removed from the mailing list.

We are including a questionnaire which we hope you will complete. You will see that on the back page it is already addressed to us. When you are finished, please fold along the dotted lines, staple or tape it to form its own envelope, stamp and pop it in the mail! The deadline for us to receive your questionnaire is *31 August 1978*.

After we have tabulated your responses, we should be able to decide which readers no longer wish to receive *Cajanus* and how many of you are willing to share copies so we can provide a free service to many different groups. We also welcome your suggestions to make the publication as useful as possible for your work.

We will start to prune the mailing list after 31 August 1978; non-responders can expect to no longer receive *Cajanus*.

We appreciate that the mail is often slow. If this questionnaire is slow in reaching you, please still complete it and return to us. We will add your name back on the mailing list under these circumstances if you wish.

▲

## TOPICS AND COMMENTS

### ADVERTISING BABY FOODS\*

Arising out of a newspaper profile on a manufacturer of infant foods, toiletries, and pharmaceuticals, a well-known Nutritionist in Jamaica\*\* challenged the manufacturer's claim that they do not advertise their infant formulas.

Said the Nutritionist: "certain nurses have been known to push with special zeal the virtues of these mothers' milk substitutes on unsuspecting mothers, under the guise of professional solicitude for the health and welfare of their offspring.

"Do these 'nurses' who visit the mothers in hospitals and homes receive any form of compensation from the manufacturers or selling agents for their private persuasions?"

The Company supplied the following statement in response:

"We have always directed the ethical promotion of our formula to the Medical and Nursing professions through the Medical Representative and through the Mothercraft Nursing Service, which also provides an educational service to the mother in her home which, it is felt, is the best place to guide and advise her on the care of her infant.

"Our service also covers advice on the advantages of breast-feeding, the correct mixing of formula and sterilising utensils used, immunizations, family planning, diet and care of the skin, thereby playing a supportive role to the mother in better breast-feeding or artificially feeding her infant.

---

\*Adapted from *The Daily Gleaner*, Jamaica, 5 November 1977.

\*\*Dr. J. Michael Gurney, Director, CFNI.



*If after birth a mother is introduced to the technique of breast-feeding and given the necessary encouragement by an experienced professional, her chances of successful breast-feeding, without supplements, in the first 4 months, will improve.*

[Photo: D. Littlewood © PAHO]

"We refer many mothers, either to their local clinic or their physician, if there is a problem that needs medical advice. Among mothers whom we are currently visiting there are several hundreds who are fully breast-feeding their infants.

"Our Mothercraft Nurses are paid regular salaries and receive no special commission for their services.

"Requests for visits from the Nursing Service are telephoned in or brought to the office daily by mothers who journey to the office for the advice offered free of charge by the Mothercraft Nurse. We consider this a useful educational service to the community on proper child nutrition."

*Editor's Note: Readers might find relevant the following excerpt from an article in the PAG Bulletin (Vol. 12, Nos. 3-4, Sept. - Dec. 1977, pp. 80-81) by Leah Margulies.*

*"...insuring that the companies will adhere to their self-imposed restrictions is virtually impossible in the absence of regular scrutiny by an independent body. In August 1977, a Mead Johnson milk nurse was interviewed by this author on the ward of the largest public hospital in Jamaica. The milk nurse had in her hand a list of mothers she intended to visit in their homes. She had copied the names off ward lists. In an interview just two days before, the Chief Medical Officer of Jamaica had explained that government policy prohibited milk nurses from entering public hospitals. The milk nurse's actions were therefore in clear violation of Bristol-Myers' code of ethics (Bristol-Myers Company International Division, 'Policies and Practices') that specifically requires cooperation with government health policies, as well as the solicitation of references from medical professionals for all home visits.*

*"Clearly, there are limits to self-regulation. Government regulation can also be sidestepped. Even in Jamaica, where the Government is more committed than most to reversing the bottle feeding trend, enforcement of government legislation is made difficult by shortages of financial and human resources in the*

health sector. However, government regulation, if it can be enforced, is probably the best way to stop destructive company policies. But universal government regulation is a long way off."

Do any readers have any views or information on this matter they might like to share? ▲

Answers to quiz on page 64.

1. A tall perennial bush with a fibre of superior quality (strong and free from stretch and shrinkage), native to East India.
2. Contains high-protein seeds resembling the soyabean and containing a gum that is in increasing demand by industry.
3. A leguminous tree native to the Atacama Desert in Chile and capable of growing through a metre-thick layer of salt. Pods and leaves are excellent forage.
4. A grape-like fruit almost unheard of outside of the western part of the Amazon basin; it can be eaten raw or used to make a kind of wine.
5. Claimed to be the world's best-tasting fruit, growing in the humid tropics of southeast Asia.
6. A shrub with nutritious, spinach-like green leaves known only in Central America.
7. Peruvian parsnip, which looks like celery and is often grown in the Andes instead of potatoes.

- Source: U.S. National Academy of Sciences. Underexploited Tropical Plants with Promising Economic Values, Washington, D.C., 1975.

## FOOD AND FIBRE\*

Enthusiasm for fibre is sweeping the world. The journals are full of it, the popular press revels in it, and doctors take time off from prescribing it only to attend international conferences on it (Edinburgh 1973; Chicago 1974; Marabou, Sweden 1976; Washington 1977). A detached observer must be amused because the new craze is in fact one of the oldest inventions of nature. Fibre is simply plant cell walls. As such, it is the very basis of life on this planet, for only when cell walls evolved could plant life begin and hence, ultimately, animal life.

The natural diet of any plant-eating animal, including man, is obviously a fibre-rich diet. In "discovering" fibre modern man is waking up to the fact that his food is systematically deprived of fibre on its journey from field to grocery shop. A modicum of food processing is inevitable in urban civilization, if only to keep food fresh, but food technology has recently developed a momentum of its own, and supermarket shelves are now crowded with highly contrived products. Almost all of these contain refined - that is, fibre-depleted - carbohydrate, especially sugar and white flour. Today most people get most of their carbohydrate in these forms. Consequently the average Briton obtains 18% of his daily calories from fibre-free sugar and about 20% from wheat flour that retains only a third of its original fibre.

Fibre is tough stuff, which is why it is removed. It is abundant in the outer layers of seeds, protecting the embryo within. Hence whole foods such as fruit and vegetables and unrefined cereals (wholemeal flour, brown rice, rolled oats, crude maize meal) have a rough texture in the mouth, and they have to be chewed. Chewing is work. This slows down the intake of food and may even deter it. Fibre-rich foods are probably digested and

---

\*Reprinted with permission from the *British Medical Journal*,  
13 August 1977.

absorbed more slowly than refined foods, though experiments are needed to prove this. Certainly the extraction of water and electrolytes is delayed thanks no doubt to the remarkable water-holding properties of fibre, and the contents of both small and large intestines are bulkier. The extra bulk would be expected to stimulate stretch receptors more and promote motor activity. But in fact the fibre-fed colon generates lower and less frequent pressure waves (at least in patients with initially high pressures - namely, those with diverticular disease and irritable bowel syndrome), even though it transmits its contents more rapidly. Thus, fibre seems to make the motor work of the colon more efficient. It certainly makes defecation easier.

The same refining process which leads to underfilling of the colon and all its consequences leads also to overfilling of the mouth - that is, to over-nutrition and all its consequences. The concept is so simple, and at the same time so big, that it is not easily accepted by academics trained in the complexities of biochemistry and the minutiae of cell biology. Furthermore, it is more respectable nowadays to solve problems by statistical tests than by logical argument.

The logic is hard to resist. Modern man has been lampooned as "fat, toothless, and constipated," and the statistics show that this is no exaggeration. Half the over-40s have only false teeth, half exceed 110% of ideal body weight, and most are on their way to diverticular disease. Nearly all eat almost all their carbohydrate in refined form. Since fibre dilutes calories and makes them harder to get, keeps the teeth clean and intact, and renders the stools soft, there is at least a case for the theory that fibre-depleted foods are intrinsically damaging to health.

It will take years of research to convict or acquit refined carbohydrates of all the charges laid against them. In the meantime, how much fibre should we eat to keep healthy? It is an impossible question to answer. Even with traditional nutrients,

the daily requirements are mostly disputed, arbitrary, or unknown. (For example, the energy requirements of similar subjects doing the same job may differ by 100%). Fibre is not even a nutrient - it is the packaging that surrounds nutrients - so we can hardly apply the same rules. Moreover, it varies enormously, both qualitatively and quantitatively, in different plants, in the various parts of a plant, and at different ages of the plant. Can the requirements of such a variable dietary component be determined? The only practical way would be for the individual to adjust his intake of fibre-containing foods until he obtained the desired effects. But even here there are problems. The desired effects of fibre are almost impossible to define numerically. Thus for stools we have no consensus on the ideal weight, frequency, consistency, and transit time. We do not know, and it is impracticable to measure, how quickly an individual should ingest and absorb his carbohydrate or how much chewing he should do to keep his mouth healthy. In the end research may produce some answers. For the moment there is something to be said for the simple view that if a man decides to take all his plant foods in unrefined form nature itself will ensure that his intake of fibre is right.

*Editor's Note: The references published with this paper will be supplied on request.*

#### CAJANAQUOTE

*"It's a very odd thing  
As odd as can be -  
That whatever Miss T. eats  
Turns into Miss T."*

*- Walter de la Mare  
(1873-1956)*



## THE CHILD TO CHILD PROGRAMME\*

This programme is designed for the children in the world who are most socially, nutritionally and educationally at risk. These are the children under five living in rural and peri-urban areas of developing countries, of which there are 350 million, lacking the essential services of health, nutrition and education. The programme has been developed by the Institutes of Education and Child Health and the Ministry of Overseas Development of the United Kingdom, as part of their efforts to make 1979 the International Year of the Child.

The programme hopes to use a resource within the communities in developing countries - the primary school - to improve the physical health and development of younger children who are so often under-privileged.

### *HOW THE SCHOOL AGE CHILD CAN HELP*

Even in remote areas of most developing countries there are usually primary schools. The programme hopes in 1979 to involve the school child with the pre-school children in his family, village or town. In developing countries the school age child often carries young brothers or sisters around, feeds them, talks and plays with them and provides a great deal of stimulation.

This programme will build on knowledge and practices which already exist. Some secondary school children may help in this programme but they are often very busy. Primary school children still want to help the family and they have the time. We know that primary school children learn new ideas at school and talk about them at home. Most of the school children of today will be parents in ten years.

---

\*Adapted from an information leaflet of the Institute of Child Health, London, England.



*The school child is close to his younger brothers and sisters and provides a great deal of stimulation in a way which helps these to develop.*

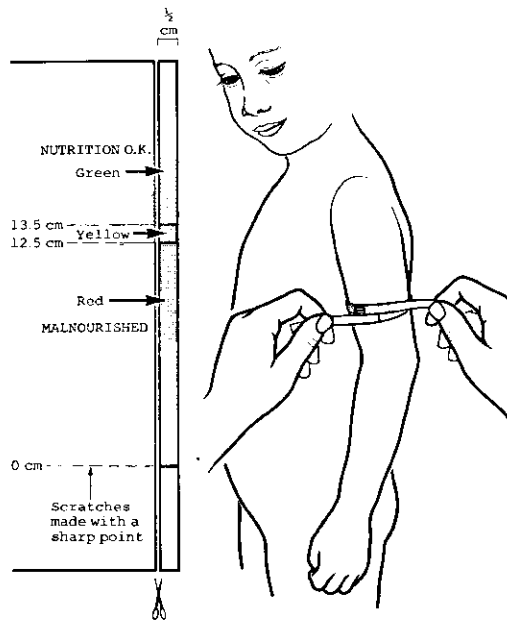
[Photo: © Institute of Child Health]

#### *THINGS THE PRIMARY SCHOOL CHILD CAN DO*

We hope primary school children will learn about the health and development of very young children. Doctors and senior teachers in each country will form a national committee and they will provide teachers with special materials to use. When away from school the children can collect simple information and the school can give this to the leaders in the village or town. This information will help in health planning.

Primary school children can, for example:

1. Count the number of children under five in the village or street.
2. Use the coloured armband method to find out if children between the ages of one and five are well fed and healthy.



*The Shakir Strip. Make this from 1/2-1 cm. of cleaned X-ray film. Colour the film with felt tip pens. Use the strip of film round the middle of the upper arm of children between the age of 1 and 5. School children already use this method successfully.*

[Photo: © Institute of Child Health]

3. Find out how much foods cost and how prices change during the year.
4. Find out how much water the family uses and where it comes from.

### *OTHER THINGS CHILDREN CAN DO*

1. Teach and play with their young brothers and sisters in a way which helps them to develop.
2. Tell the family the best energy foods and how good they are for small children. Doctors now think that several meals and those foods which give a lot of energy are as important as protein foods.
3. Make sure that children with diarrhoea drink enough water with sugar and the right amount of salt added.

### *USING OTHER GROUPS*

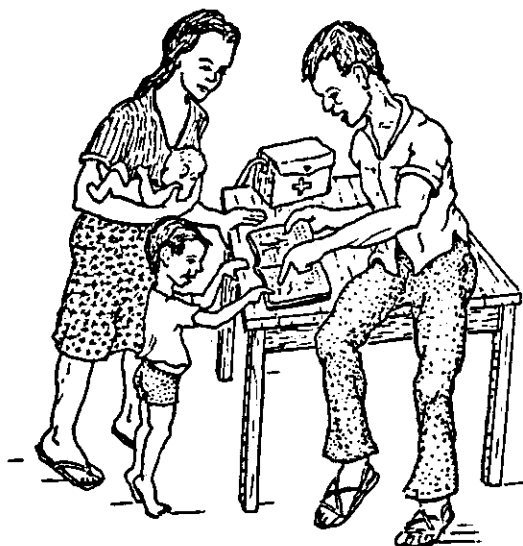
Other groups (viz. Boy Scouts, Girl Guides and religious youth and women's groups) can also help.

### *BRINGING HEALTH WORKERS AND TEACHERS TOGETHER*

One of the most important parts of this programme will be discussions between teachers and health workers. The national Ministries of Education and Health can start these discussions and encourage the health workers and teachers in rural and poor areas. This programme will fit in with the effort of international organizations and governments to develop part-time health workers (village health workers, social workers, 'promotores'\*, etc.). These can pass on their knowledge in the village or town better than other medical workers.

---

\*Editor's Note: Promotores - health auxiliaries recruited at the village level to provide basic health to the community.



*The health worker passes on his knowledge to other people in his village or town.*

*[Illustration from the forthcoming English edition of Where There is No Doctor by David Werner © Institute of Child Health]*

#### *EVALUATION*

Teacher training colleges and secondary schools can check on this programme to find out how successful it is. There will be a baseline study at the end of 1978 to discover how much school children know and what they do. The same study will be made in the middle of 1979 and at the end of that year. There can be competitions between districts and regions in the country to see how successful the programme has been. If our aims are simple and practical, three-quarters of the children will learn and have experience of doing things by the end of the year.

*EVERYBODY CAN HELP*

This programme will be successful if enough people understand how important the child is to the programme and give their time and energy. Ordinary people and groups will have to ask their governments to help. There is not much time - Will you give your support? You can do this by:

1. Talking to other people who work in your area in Health or Education.
2. Asking your government to help.
3. Sending any ideas or material (in any language) for use with school children to the CHILD To Child Programme, International Year of the Child, Institute of Child Health, 30 Guilford Street, London WC1N 1EH, U.K.

*Editor's Note: If you think you can start such a programme, please write to Dr. David Morley at the above address for further information, also suggestions of pilot programmes workers may wish to become involved with. CFNI would also be happy to help in any way we can, so please write to us should you so wish.* ▲

*CAJANAQUOTE*

*"One feeds on lard and yet is leane  
And I but feasting on a beane  
Grow fat and smooth: The reason is  
Jove prospers my meat more than his."*

- Robert Herrick  
(1591-1634)

## MANAGING THE METRIC MYSTERY\*

## THINKING METRIC

The metric system is simple to learn. For use in your everyday life you will need to learn about ten new units. You will also need to get used to a few new temperatures. There are even some metric units with which you are already familiar: those for time and electricity are the same as you use now.

The principal units of the metric system are the *metre* which is the unit of length, the *gram*, which is the unit of weight, and the *litre*, which is the unit of capacity.

Other units in the metric system are the decimal subdivisions and multiples of the basic units, named by combining the proper prefix with the name of the basic unit to form self-defining terms. The prefixes commonly used are "milli-", meaning the one-thousandth part; "centi-" meaning the one-hundredth part; and "kilo-" meaning 1000 times. For example, "millilitre" means the one-thousand part of a litre, "centimetre" means the one-hundredth part of a metre, and "kilogram" means 1000 grams.

This feature makes the metric system a "decimal" system - like our monetary and numeration systems - and thus a much easier system to learn and use. You can even make comparisons with our monetary system that will help you to remember the metric prefixes. There are 10 mills in a cent, 10 millimetres in a centimetre. There are 100 cents in a dollar, 100 centimetres in a metre.

---

\*Adapted from "Household Weights and Measures". Special Publication No. 430 of the U.S. Department of Commerce. National Bureau of Standards, Washington, D.C., 20234, U.S.A., and from a news feature of the Agency for Public Information, Jamaica.

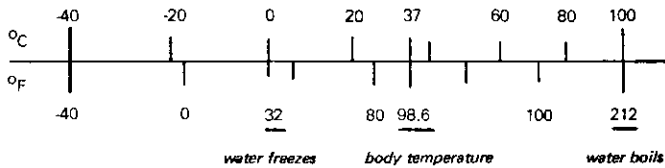
Table 1: Useful Measurement Equivalents

Customary		Metric	
<u>Length:</u>			
1 foot	= 12 inches	100 centimetres	= 1 metre
1 yard	= 3 feet = 36 inches	1,000 metres	= 1 kilometre
1 (statute) mile	= 5,280 feet = 1,760 yards		
<u>Area:</u>			
1 square foot	= 144 square inches	10,000 square centimetres	= 1 square metre
1 square yard	= 9 square feet		
1 acre	= 43,560 square feet	10,000 square metres	= 1 hectare
1 square mile	= 640 acres	1,000,000 cubic centimetres	= 1 cubic metre
<u>Volume:</u>			
1 cubic foot	= 1,728 cubic inches	1,000 millilitres	= 1 litre
1 cubic yard	= 27 cubic feet	1 millilitre	= 1 cubic centimetre
1 quart (liquid)	= 2 pints = 32 fluid ounces		
1 peck	= 8 quarts		
1 bushel	= 4 pecks = 32 quarts		
1 quart (liquid)	= 0.86 quart (dry)		
1 quart (liquid U.S.)	= 0.83 Imperial Quart		
<u>Weight:</u> (Mass)			
1 pound	= 16 ounces	1,000 grams	= 1 kilogram
1 ton	= 2,000 pounds	1,000 kilograms	= 1 metric ton
1 long ton	= 2,240 pounds		



Table 2: Everyday Metric Units

<u>Basic Units</u>	<u>Other Commonly Used Units</u>
Metre: a little longer than a yard (about 1.1 yards)	millimetre: 0.001 metre - diameter of paper clip wire
Litre: a little larger than a quart (about 1.06 U.S. quarts) (0.88 Imperial quarts)	centimetre: 0.01 metre - a little more than the width of a paper clip (about 0.4 inch)
Gram: a little more than the weight of a paper clip	kilometre: 1000 metres - somewhat further than $\frac{1}{2}$ mile (about 0.6 mile)
	kilogram: 1000 grams - a little more than 2 pounds (about 2.2 pounds)
	millilitre: 0.001 litre - five of them make a teaspoon

*Temperature (degrees Celsius are used)**SHOPPING FOR FOOD*

When metric measures become commonplace, one of the first things you will notice as you shop will be the new words for weight, volume and length on packaged goods.

Currently, in packaged foods the number of different types of measurement you encounter in one day's shopping is bewildering. Some weights are expressed in avoirdupois ounces and pounds; fluid measures are expressed in gallons, liquid quarts, pints, and fluid ounces; and dry measures are expressed in bushels, pecks, dry quarts, and pints. A dry quart is 16% larger in volume than a

liquid quart. By contrast, the metric system has one unit for liquid volume: the litre, or some decimal fraction or multiple thereof (e.g. the millilitre sometimes called cubic centimetre). Only our long familiarity with the customary system has made it useable.

Probably, one of the first things you will notice is the increasing use of new words for weight and volume. Instead of pounds for example, items such as meat, fish, butter, and some vegetables will increasingly be sold by the kilogram (one kilogram is a little more than two pounds). Cheese will be sold by the gram instead of the ounce.

Liquids will be sold by volume expressed in litres (a litre is a little less than a quart).

However, there will be no change in food items sold by number, such as a dozen eggs, or a half dozen oranges.

#### *ADVICE TO THE CONSUMER*

- Buy solid commodities by weight, rather than by count, whenever possible.
- Learn the unit price (price per litre, per kilogram, etc.) of what you buy.
- Learn to read scale and metre indications, and observe the weighing and measuring of your purchases.
- On unit priced items, check your purchases to make sure that you are paying the correct price for the quantity received.
- Mere package size may be deceptive. Read and compare labelled quantities in relation to price.
- Demand accurate weight and measure in your purchases just as you demand accurate change from the cashier.

- Some stores provide scales on which you can check the weights of your purchases. Use them!
- Become acquainted with local Weights and Measures Boards, and consult them if in doubt on any weights and measures matters.
- Report suspected inaccuracies or violations of the weights and measures laws and regulations to your Weights and Measures Board.

### IN THE KITCHEN

Although there may be concern about the effect of metric on cooking, you really will have little to worry about provided we change to metric in a sensible way.

It will take a little time to get accustomed to some of the changes. For example, the capacity of new kitchen appliances such as stoves, refrigerators and freezers will be given in *cubic metres* instead of cubic feet. Saucepans, pots, and casserole dishes will be sold according to *litre* capacity. Cake pans and cookie sheets will be shown in centimetres not inches. Temperatures of ovens will be expressed in degrees *Celsius* instead of *Fahrenheit*. If you are a weight watcher, the calorie will be replaced by the *kilojoule*.

There will be no need for much change in our recipes if the new metric recipes remain volumetric and if, as anticipated, the utensils retain approximately the same ratio as the customary cup (237 ml), teaspoon (4.9 ml), and tablespoon (14.7 ml). This is easily achieved by adopting a "metric cup" of 250 ml ( $\frac{1}{4}$  of a litre); a "metric teaspoon" of 5 ml, and a "metric tablespoon" of 15 ml. Of course, amounts such as "a pinch" and "2 eggs" will remain the same, although weights such as the amount of meat will be expressed in *kilograms* (1 kg equals 2.2 pounds).

Under this type of changeover to metric in recipes, either customary or metric utensils can be used for any recipe with the same results being obtained, except for slight variations in quantity, as long as the same system is used for the entire recipe. For example, a "customary" recipe made by using metric utensils would yield only about 5% more quantity. And your favourite cookbooks will continue to be useful forever!

In order to try metric recipes however, it will help to have measures that show millilitres. For example:

- a 250 ml liquid measure, which replaces the eight fluid ounce cup and is graduated in 25 ml divisions [for larger quantities, there are also 500 ml and 100 ml (or one litre) measures].
- a set of three dry measures of 50 ml, 125 ml, and 250 ml.
- a set of five small liquid or dry measures; 1 ml, 2 ml, 5 ml (replaces the teaspoon), 15 ml (replaces the tablespoon), and 25 ml.

But even if you can't get these utensils yet, you can still try these metric recipes:

#### CODFISH CASSEROLE

$\frac{1}{2}$ kg* codfish (saltfish)	2 ml ( $\frac{1}{2}$ teaspoon) salt
$\frac{1}{2}$ kg* Irish (white) potatoes, cooked and diced	Bread crumbs for sprinkling
1 large onion	Butter or margarine for topping
1 small nutmeg	10 ml (2 teaspoons) pepper sauce
45 ml (3 tablespoons) butter	
2 ml ( $\frac{1}{2}$ teaspoon) black pepper	

---

\*A little more than 1 lb.

Method:

Boil, clean and shred fish. Mix with rice, potatoes, onion, butter, pepper, salt, nutmeg, and sauce. (If too dry, add some fish stock to moisten). Rinse an oven-proof casserole dish with cold water. Turn fish mixture into casserole dish. Sprinkle generously with bread crumbs and dot with butter or margarine. Bake in oven at 175° Celsius (350°F) until browned.

Nutritional Analysis:

This recipe contains 44.7 grams of protein, 1190 kilocalories and 8.3 mg of iron.

## CHOCOLATE CHIP COOKIES

500 ml (2 cups) cake and pastry flour	2 ml ( $\frac{1}{2}$ teaspoon) salt
250 ml (1 cup) butter or margarine	1 egg
175 ml ( $\frac{3}{4}$ cup) granulated sugar	5 ml (1 teaspoon) vanilla
175 ml ( $\frac{3}{4}$ cup) brown sugar	250 ml (1 cup) chocolate chips
2 ml ( $\frac{1}{2}$ teaspoon) baking soda	125 ml ( $\frac{1}{2}$ cup) chopped nuts

Method:

Preheat oven to 190° Celsius (375°F). Sift together flour, baking soda and salt. Cream butter and sugar together. Add egg and vanilla, beating until light and fluffy. Stir in dry ingredients. Fold in chocolate chips and nuts. Drop batter from a teaspoon about two inches apart on an ungreased baking sheet. Bake in preheated oven for eight to 10 minutes, or until golden brown. Makes about 50 cookies.

Nutritional Analysis:

This recipe contains 45.9 grams of protein, 4629 kilocalories and 10.5 mg of iron.

Table 3:   Equivalents of the Common Capacity  
          Units Used in the Kitchen

Units	Tea- spoons- ful	Table- spoons- ful	Fluid ounces	Cup- fuls	Liquid pints	Liquid quarts	Milli- litres	Litres	Units
1 teaspoonful equals	1	$\frac{1}{3}$	$\frac{1}{6}$	*	*	*	5	*	Equals 1 teaspoonful
1 tablespoonful equals	3	1	$\frac{1}{2}$	$\frac{1}{16}$	$\frac{1}{32}$	*	15	*	Equals 1 tablespoonful
1 fluid ounce equals	6	2	1	$\frac{1}{8}$	$\frac{1}{16}$	$\frac{1}{32}$	30	*	Equals 1 fluid ounce
1 cupful equals	48	16	8	1	$\frac{1}{2}$	$\frac{1}{4}$	240**	0.24**	Equals 1 cupful
1 liquid pint equals	*	*	16	2	1	$\frac{1}{2}$	470**	0.47**	Equals 1 liquid pint
1 liquid quart equals	*	*	32	4	2	1	950**	0.95**	Equals 1 liquid quart
1 millilitre equals	$\frac{1}{6}$	*	*	*	*	*	1	1/1000	Equals 1 millilitre
1 litre equals	*	*	34	4.2	2.1	1.06	1000	1	Equals 1 litre

\*Equivalent not commonly used.

\*\*Approximate.

Table 4:   Approximate Weights of Some Commodities  
          in Avoirdupois Ounces per Cup

Beans (dry)	- 6 $\frac{1}{2}$	Pancake mix	- 5
Butter, margarine, cooking oils	- 8	Prunes (dried)	- 5 $\frac{1}{2}$
Citrus fruit juice (fresh)	- 8 $\frac{1}{2}$	Raisins (seedless)	- 5
Cornmeal	- 5	Rice	- 7
Eggs (whole)	- 8 $\frac{1}{2}$	Shortening (vegetable)	- 7
Flour (wheat, all-purpose, sifted)	- 4	Sugar (brown, moist, firmly packed)	- 7 $\frac{1}{2}$
Flour (cake, sifted)	- 3 $\frac{1}{2}$	Sugar (granulated)	- 7
Milk (whole, fluid)	- 8 $\frac{1}{2}$	Water	- 8 $\frac{1}{3}$
Milk (dry)	- 4 $\frac{1}{2}$		

## NUTRITION: DOES THE PHYSICIAN KNOW ENOUGH?\*

*by*

*Willard A. Krehl*

### *CLOSING THE EDUCATION GAP*

Any poll of "nutritionists", particularly in medical schools, would lead to the conclusion that the subject of nutrition is inadequately represented in the medical curriculum. On the other hand, a survey of medical school administrators would probably indicate that nutrition teaching is receiving adequate attention and support. Both of these groups reflect an understandable bias.

Perhaps a more meaningful and more accurate measure of the adequacy of nutrition education in medicine would be derived from a study of the actual nutritional habits of consumers of health care - the patients. What nutrition advice or detailed information do they receive from their physicians?

- In general, as judged by information given to patients, doctors appear to be inadequately trained to provide in-depth consultation regarding nutrition and dietary recommendations.
- Doctors tend to depend excessively on the hospital dietitian rather than provide the medical guidance in the nutritional management of a whole host of medical problems.

---

\*Adapted with permission from "The Professional Nutritionist" (Vol. 8, No. 2), 190 Ninth Street, San Francisco, California 94103, U.S.A. The author is Professor and Chairman, Department of Community Health and Preventive Medicine, Jefferson Medical College of Thomas Jefferson University, Philadelphia.

- Further, they depend all too little on the use of the nutritional management of many medical problems in which appropriate nutritional application has been well established.
- Patients evidently obtain little satisfaction or information from their doctors regarding their questions on nutrition, food and diet. In short, there is a credibility gap between doctor, patient, and often dietitian. (Stark proof of the patient's eagerness for nutritional information is evident from the tremendous sale of diet-oriented books.)



*The physician and dietitian should cooperate in the application of nutritional considerations to the care and treatment of patients.*

[Photo: L. Brammer © CFNI]



- There is clearly a need for a nutrition and dietary team, both within the hospital and in the ambulatory setting. This permits the physician and the dietitian to work in concert for the direct benefit of the patient, utilizing food and nutrition as the medium of medical management.

From the physician's point of view, nutrition is too often equated with dietetics, home economics, biochemistry, physiology, or some other of the basic sciences. Nutrition, while obviously relevant to these areas, is not identified as a relevant discipline clearly related to the problems of clinical medicine.

Proof of this is readily evident by evaluating medical records chosen at random. In many, hardly a mention is made of nutrition or its role in the management of the problem - despite the fact that there may be repetitive serum electrolyte analyses, most of which are normal. Yet no mention is made of the fluid or dietary intake and output of the patient.

Another problem for the physician, of course, is that the discussions with the patient regarding diet are time consuming. Time equals money, which is important both to the patient and to the physician. Also, the multidisciplinary character of nutrition tends to create a blurred image of the subject. Nutrition as a concept remains unclear both to medical students and practising physicians.

A key problem is how to make the study of nutrition more relevant to the medical education process, particularly as it deals with the maintenance of health and the medical management of disease. How do you do this in a medical educational environment that is now almost overwhelming in size and complexity?

Should nutrition be more oriented to the training of the primary care physician, with emphasis on community health problems, or to the newly-developing assistant physician?

Should there be a speciality of clinical nutrition within the established medical speciality system?

Should we develop the dietitian-nutritionist as a more critical, important member of a health care team which provides in-depth nutrition counselling services that interrelate with the physicians and their patients?

Each of these questions deserve thought and consideration. There are no simple answers.

#### *THE ROLE OF CLINICAL NUTRITION*

It is difficult to place clinical nutrition in a proper niche in medicine or in the medical education system. It has been pointed out that one of the strengths of nutrition lies in the fact that it does have applications and implications for every field and speciality area of medicine. This generalization may, at the same time, be a weakness.

Nutrition does make a contribution to all of the key medical disciplines. It is also a most potent force in community and public health and particularly in preventive medicine. In fact, here may lie its greatest potential.

Currently, we have in our medical schools few, if any, "Professors of Clinical Nutrition". Therefore, the subject lacks personal focus, and identification, and the inevitable enthusiasm and stimulation generated from the creativity and drive of individuals. The development of departments of nutrition in medical schools does not appear to be realistic. We already have too much departmentalization and fragmentation in our medical school programmes.

I strongly advocate the development of a coordinated and integrated body of knowledge of nutrition in the medical school. It should be centred around a strong individual or Professor of Clinical Nutrition who is guided and aided by an "Institutional Interdepartmental Liaison Nutrition Committee" in which a number of

critical departments are represented. Such an arrangement would provide the focus from which could develop the teaching of nutrition, nutrition research, and the application of nutrition to the solution of medical problems.

With such developments, particularly with emphasis on the applications of nutrition to medicine, our training programmes in clinical nutrition might well flourish and attract capable residents. It may eventually become apparent that a doctor can actually make a livelihood practising the application of clinical nutrition!

#### *ROLE OF THE FOOD MANUFACTURING INDUSTRY*

In view of the importance of food to health and the obvious interest of the large food industries in food products and their sale, it is strongly recommended that they contribute much more substantially to the support of endowed chairs of clinical nutrition in our medical schools. Insofar as food supplies nutritional needs, questions must be asked continually about the quality of the nutrient contribution of our food supply and in what ways foods may contribute to our health - or possibly exert a hazard to health.

Better liaison also, is obviously needed between the food industries and medical schools in the study of food as a key factor in maintaining health and recovery from illness. The pharmaceutical industry has long recognized the value of such interrelationships.

Despite the current difficulties in positioning clinical nutrition in medicine, I am convinced that it not only has a place, but also that its role will become increasingly important as the basic discoveries in nutrition are applied in clinical medicine.

*CONTRIBUTIONS OF NUTRITION TO MEDICAL TEACHING*

Nutrition is, as are all the disciplines of medicine, a part of human biology. They should be taught as such. Nutrition serves optimally as a link between biochemistry and physiology, employing both in the solution of its problems. As biochemistry and physiology have developed greater specificity and quantitation, also has the discipline of the basic science of nutrition.

Many are concerned that the teaching of nutrition is languishing in our medical schools. It well might be, largely, I am afraid, because we have shown too little ingenuity in the rapidly changing developments in the presentation of medical subjects. We have not really decided what part of the subject matter of nutrition is relevant, who should teach it, or where and when it is best taught.

Much might be achieved by establishing a sound and concise body of appropriate nutrition information to be presented in a nutrition curriculum oriented in three areas: the basic sciences, at the clinical level, and at the community level.

In considering a place for nutrition in the medical education programme, we must exercise some constraint on our enthusiasm. It should be recognized that large sections of time - specifically and exclusively organized and designated as nutrition - may not be feasible. Certainly the curriculum is already very crowded.

But this does not minimize the need for a sound basic or core programme of nutrition information, one that would present the essential and basic principles in a dynamic way. Such a programme stimulate the student to further reading, self-education, and perhaps some research.

We, of course, recognize that much of this information may already be presented in the established basic science disciplines under another label. Here again, we need better coordination.

Concepts, rather than just facts, are most essential. Today's facts are all too often quickly outmoded by tomorrow's new findings.

The clinical teaching of nutrition offers an additional and generally unappreciated opportunity for demonstrating the application of nutrition to medical problems. This is especially true of those students who have already been grounded in the basic principles of nutrition.

One must also realize that a great deal of nutrition teaching is being done during the course of instruction in the various subspecialty areas of medicine, such as haematology, gastroenterology, and paediatrics. Knowledge and research in nutrition are advancing rapidly. The continuing application of this knowledge is of great importance in improving patient care and maintaining their future health.

#### *THE NUTRITION HEALTH CARE TEAM*

An analysis of a large number of patients attending the Jefferson Health Maintenance Program for comprehensive health status evaluation indicates that approximately 45% of them have significant nutritionally-related problems. Those include serious overweight; high levels of serum cholesterol or triglycerides; elevated fasting blood sugar and glucose intolerance tests; and hyper-uricemia or other nutrition-related entities.

Since these characteristics are prognostic of a large number of more serious and major health problems, these patients are advised to modify their life styles - particularly to change their dietary patterns. Many do, in fact, attempt to follow recommended diets. But relatively few patients succeed in changing their eating habits or life styles. Nor do they keep their weight down over a long period of time as return visits to the programme indicate.

As many studies have shown, permanent changes in long-established eating habits are most difficult to make. This is especially so when no pressing health problems have yet become manifest. We have concluded that more direct assistance is obviously required by most patients in order for them to comply with dietary recommendations. Much more information on the nature of their problem and the components necessary for successful compliance is needed by the patient.

We have attempted to meet this need by establishing a nutrition and diet counselling service as part of our overall Health Maintenance Program. The goal is to provide a continuing resource for dietary information, restructuring of life style with regards to dietary habits, and to make this service available on a continuing and fee-for-service basis. It is a first step in the development of a nutritional guidance programme to which healthy or ill patients from any sector of the community might be referred.

Major goals of this diet counselling programme in Philadelphia, U.S.A. are:

- To determine major nutritional factors involved in the development of elevated serum lipids or excess weight at the time patients enter the programme, and to classify patients according to these factors.
- To develop suitable approaches to dietary counselling and special educational materials for patient instruction, based on an analysis of reasons for dietary problems in each individual case.
- To determine the effects of this specialized approach to health counselling on knowledge, attitudes, and behavioural changes - as well as end results.

- To determine the kinds and characteristics of individuals in terms of the major factors involved in the problem, such as social background, health status, and cultural patterns, for whom the dietary counselling proves to be most effective.

### *CONCLUSIONS*

One of the great difficulties in clinical nutrition is the evaluation of nutritional status during the latent stage of deficiency - before obvious signs of nutritional deficiency develop, or before serious nutritional problems are obvious.

It is evident that practising physicians, particularly primary care physicians, need more training in the basic science fundamentals of nutrition. They need to be alert when their patients may require closer supervision of their diet and nutritional supplements. They must be able to give better patient advice than "Eat three square meals a day and you will be fine", "Eat a well-balanced diet", "Don't eat too much salt", or "Watch your diet".

Patients want and deserve much more specific and positive information. Physicians must be prepared to give it, or quite appropriately, to refer a patient to properly trained nutrition counsellors qualified to give nutrition support services. Obviously, there must be a playback from the nutrition counsellor to the physician regarding each patient, so that this information becomes a part of the patient's permanent medical record.

There needs to be established, then, a nutrition team within the health care system which focuses on the ultimate benefit of the individual. Much greater realization is needed in medicine and in community health that good nutrition, along with good hygiene, are the most important measures that could be taken to prevent the development of many chronic diseases. ▲

## KEEPING FOOD SAFE FROM HARMFUL GERMS\*

The health of people depends to a large extent on the food they eat. Keeping food safe from harmful germs and their toxic products is therefore an important problem, which over the years has engaged the attention of various WHO expert committees concerned with different aspects of food hygiene. The latest report of the WHO Expert Committee on the microbiological aspects of food hygiene which met in Geneva in March 1976 (with the participation of FAO), has recently been published<sup>1</sup> and it describes the microbiological agents of food-borne disease and the microbiological hazards in relation to foods. The article below, which is adapted from the second part of the Report, describes the microbiological hazards related to food processing, handling and storage, population movements, tourism, etc., as well as the measures available to control them.

### HAZARDS RELATED TO FOOD PREPARATION

The largest proportion of food-borne disease is probably caused not by commercially processed foods but by food prepared at home, in institutions, or in food catering establishments. Food-processing plants were implicated in 6% of food-borne disease outbreaks in the U.S.A. during the period 1968-73 and in nearly 25% of outbreaks in Denmark during 1954-63. The commonest causes of disease resulting from food prepared in kitchens of private homes or institutions in the U.S.A. are unexpected contamination of the raw food material and faulty preparation techniques. One study of disease outbreaks that could be attributed to food processing plants suggested that most of the outbreaks were due to

---

\*Reprinted with permission from WHO Chronicle, 31: 143-149 (1977).

Footnotes will be found at the end of the article.



contaminated raw materials (for products not given a terminal heat process) and to faulty applications of processing and packaging techniques.

Common faults in the handling and processing of food in homes, restaurants and other food catering establishments, which led to disease outbreaks, are given in Table 1. In some cases, several faults were found without the possibility of identifying the importance of each one. Several outbreaks of food poisoning, usually caused by salmonellae, were found to be due to the transfer of organisms from contaminated raw food to cooked food by hands, utensils and unclean surfaces.

Table 1: Factors contributing to 493 outbreaks of disease caused by food processed in homes or in food catering establishments

Factor	No. of outbreaks
Inadequate refrigeration	336
Food preparation far in advance of serving	156
Infected persons and poor personal hygiene	151
Inadequate cooking or heating	140
Food kept "warm" at a wrong temperature	114
Contaminated raw materials in uncooked foods	84
Inadequate reheating	66
Cross-contamination	58
Inadequate cleaning of equipment	52
Other conditions	160

Adapted from Bryan, F.L. Microbiological food hazards today - based on epidemiological information. Food Technology, 28(9): 52 (1974).

### HAZARDS RELATED TO STORAGE

Hazards related to the storage of food are determined by various combinations of factors - length of storage, type of food, methods of processing and preservation, types and relative proportions of organisms present, pH, water activity and temperature.

Temperature control is of major importance in reducing hazards from pathogenic bacteria, limiting spoilage, and keeping food safe. In countries where refrigeration facilities are available, perishable foods should be stored at temperatures that inhibit the growth of pathogenic bacteria, i.e. less than 4°C (or alternatively above 60°C). The low temperatures must be achieved quickly after processing in order to obtain the greatest benefit from refrigeration. Slow cooling may allow heat-injured spores to recover and subsequently to grow before the temperature reaches an inhibiting level.

At low temperatures, particularly under chilled storage, changes may occur in food usually as a result of the growth of psychrophilic bacteria such as *Pseudomonas*, *Achromobacter*, *Flavobacterium* and *Alcaligenes* and certain yeasts and moulds.

### HAZARDS RELATED TO FOOD HABITS

Food habits vary from one country to another and even within a country, but these habits are subject to change. In countries where environmental sanitary conditions are poor, gastroenteric diseases are one of the most important causes of morbidity and mortality. Food and water are important channels of transmission of these diseases.

The following factors tend to increase food-borne diseases:

- (1) Intensive production of livestock and the use of contaminated feeds.

- (2) Consumption of raw or undercooked meat or poultry. This increases the risk of parasitic diseases and bacterial infections and intoxications, e.g., salmonellosis, toxoplasmosis, human linguatulosus, *Taenia saginata* and *T. solium* infestations, and trichinosis. Even in countries where meat is thoroughly inspected to prevent transmission, milk infections of carcasses can still be missed. The habit of cooking large cuts of meats into which heat cannot adequately penetrate may sometimes be responsible for these infections.
- (3) Consumption of raw milk, either from choice or for economic reasons.
- (4) Consumption of raw or undercooked fish. Infections due to *Vibrio parahaemolyticus*, *Diphyllobothrium latum* or other cestodes, trematodes, and nematodes may result.
- (5) Consumption of wild animal meat. Outbreaks of trichinosis have occurred through consumption of wild boar and bear meat.
- (6) Improper home canning of foods. In the U.S.A., the majority of outbreaks of botulism occur as a result of home canning of vegetables and fruits where adequate processing has not been carried out.
- (7) Preparation of ready-to-eat foods in bulk and mass feeding, where under certain conditions normal habits of food hygiene are relaxed.
- (8) Consumption of traditional food delicacies. *Utijak*, an Eskimo delicacy prepared by keeping seal flippers soaking in oil until rotten, has been responsible for whole families dying from botulism.

## HAZARDS RELATED TO POPULATION MOVEMENTS AND TRAVEL

With improvements in the speed and safety of travel, more and more people now visit other countries; in the case of "package" tours, organized to attract tourists, a considerable number of people are exposed to environmental hazards which they would not experience in their own countries or homes.

Outbreaks of food-borne disease due to *Staphylococcus aureus*, *Clostridium perfringens*, salmonellae, *V. parahaemolyticus*, cholera and non-cholera vibrios, and shigellae have been associated with international air travel. Strict control of food hygiene in flight kitchens as well as on board aircraft is essential.

Numerous outbreaks of enteric infection have been recorded on passenger ships; several of these have been reported on cruise ships. Replenishment of ships' water supplies during a voyage has always presented a particular hazard since many opportunities exist for contamination of water between ship and shore. An additional hazard is cross contamination of drinking-water with bilge or waste water. Several outbreaks of *V. parahaemolyticus* gastroenteritis were reported on cruise ships sailing from ports in the U.S.A. in 1975. In one of these outbreaks *V. parahaemolyticus* serotype O<sub>8</sub>:K<sub>22</sub> was isolated from sick passengers and seafood cocktail was implicated. It was thought that the food was contaminated with polluted sea water. In another investigation of the incidence of gastroenteritis on a passenger ship, *Escherichia coli* 027 was the predominant organism isolated from patients with diarrhoea.

In addition to the specific hazards of well-known enteric infections and intoxications, travellers and holidaymakers are exposed to other infections usually classed as "travellers' diarrhoea"; such infections are of limited duration. There is evidence that travellers' diarrhoea is associated with strains of enterotoxigenic *E. coli* new to the individual and acquired through

the medium of food and water. Amoebiasis and giardiasis may also be involved in tourists' gastroenteritis originating from food and water.

Owing to the influx of large numbers of people to sites of pilgrimages and refugee camps, the threat of cholera and other enteric diseases in these places is very real. Camping and caravan sites, fairs and festivals can also present hazards of food-borne disease outbreaks if the sanitary arrangements are not satisfactory.

#### *HAZARDS RELATED TO IMPORTED FOODS\**

Large quantities of foods for human consumption and for feeding animals are transported from one country, or from one part of the world, to another. The exporting country may have no knowledge of the ways in which their products are used in importing countries, and foods that are considered safe in the country of origin may provoke disease in the importing country as a consequence of different food habits. The importing country, on the other hand, often has insufficient knowledge about the production and processing of the food, and public health authorities are concerned about the unknown risks. This has led to the setting up of control systems or requests for guarantees on wholesomeness, absence of pathogens, etc., which information many exporting countries are generally unable to give. Import control based only on sampling and testing of lots is often ineffective and has not been able to prevent several outbreaks of disease due to imported foods in various countries.

---

\*Editor's Note: The Jamaican Flour Crisis of January 1976 is a case in point. A shipment of flour was contaminated on board the ship in which it was being transported, by contact with a shipment of fertilizer.

## ELIMINATING HARMFUL GERMS

Different processing methods, e.g. heat treatment, refrigeration, etc., are available for combatting food-borne disease agents such as bacteria, parasites and viruses. The effects of such treatment on these agents or on toxins produced by them are summarized below.

### *Effect of Heat Processing*

#### (1) *Non-Spore-Forming Bacteria*

Officially approved heat treatment of moist foods for the purpose of eliminating non-spore-forming bacteria, notably salmonellae, ranges from 3.5 minutes at 61.1°C for liquid whole egg to 1 second at 132.2°C or over for ultra-high temperature treatment of milk. Foods with low water activity or high fat content require more intense heat treatment than foods with high water activity or low fat content. Such treatment can be expected to effectively eliminate salmonellae, staphylococci, pathogenic streptococci, brucellae, etc. Studies of the heat resistance of *V. parahaemolyticus* have shown that this organism is killed as easily as other non-spore-forming bacteria.

#### (2) *Spore-Forming Bacteria*

The heat resistance of spores of *C. botulinum* type A has been the basis for calculating minimum heat processes for low-acid canned food for half a century. Spores of *C. botulinum* types B and F may have a heat resistance approaching that of type A; spores of most type E strains are destroyed at temperatures below 100°C and strains C and D barely survive heating to 100°C. The spores of type G seem to be as resistant as types C and D.

The heat resistance of *C. perfringens* type A spores may approach that of *C. botulinum* type A, which means that they are not killed by normal cooking (boiling) of food. The resistance of spores of non-haemolytic strains is generally higher than that of

B-haemolytic strains. Heat-shocked *C. perfringens* spores, when ingested, germinate in the intestine. Later sporulation of these vegetative forms gives a greater yield of spores and therefore more toxin.

### (3) Parasites

Trichina and several other parasites are killed by exposure to a temperature of 58°C and all food-borne parasites seem to be destroyed by boiling (100°C) for a short time.

### (4) Viruses

Oncogenic viruses in ice-cream mixes were effectively destroyed by standard pasteurization (68.3°C for 30 minutes or 79.4°C for 25 minutes). Pasteurization of liquid whole egg at 60°C for 3.5 minutes resulted in a million-fold or ten-thousand-fold decrease in poliovirus and echo-viruses, respectively. Studies of survival of poliovirus and Coxsackie viruses during broiling of hamburgers showed that 4 minutes at 71°C and 76.7°C respectively were required for 90% reduction. For complete destruction of some viruses it may be necessary to boil the food.

### (5) Microbial toxins

Most fungal toxins, including the aflatoxins, are not destroyed by boiling or autoclaving. Staphylococcal enterotoxins are also very heat-resistant; more than 9 minutes at 121.1°C may be required for 90% destruction. Boiling readily destroys botulinal toxins as well as *C. perfringens* toxin, but the latter is never or only rarely present in foods.

### (6) Microwave heating

Microwave heating of food has become widespread in recent years. Frequencies of 915 or 1450 MHz are most often used. Microwaves generate heat in foods and it has been suggested that their effect is solely due to the generated heat. There are

indications of additional modes of action when vegetative cells are killed by microwave. However, microwaves do not effectively kill spores at temperatures below 100°C.

### *Effects of Irradiation*

Resistance of food-borne pathogens to ionizing radiation might be a problem in irradiation preservation of foods. Low doses of irradiation have been suggested as a means of prolonging the shelf-life of food and eliminating radiation-sensitive disease agents such as salmonellae. Large doses [ $4.8 \times 10^4$  Gy (gray) (4.8 megarad) (4.8 megarad) or more] have been recommended for sterilizing canned foods.

#### (1) *Non-Spore-Forming Bacteria*

Irradiation of food with doses of up to  $1 \times 10^4$  Gy (1 megarad) will effectively eliminate bacteria such as salmonellae, staphylococci, *Vibrio*, and others.

#### (2) *Spores*

Spores of *C. botulinum* are among the most radiation-resistant microbial forms. The dose required to destroy 90% of spores is a little more than  $3 \times 10^3$  Gy (0.3 megarad) for the most resistant strains of types A and B and more than  $6 \times 10^3$  Gy (0.6 megarad) for proteolytic type F. In the U.S.A.,  $4.8 \times 10^4$  Gy (4.8 megarad) has become the accepted sterilizing dose for food.

#### (3) *Parasites, viruses, toxins*

Parasites are rather sensitive to irradiation. Larvae of *Trichinella spiralis* may survive as much as  $1 \times 10^4$  Gy (1 megarad) but  $1 \times 10^2$  Gy (0.01 megarad) suffices to sterilize the female larvae and thus interrupt the infection cycle. Viruses are quite resistant but it is believed that a sterilizing dose ( $4.8 \times 10^4$  Gy or 4.8 megarad) will inactivate viruses naturally present in food. Toxins in food cannot be inactivated by irradiation.



## *Refrigeration*

### *(1) Non-Spore-Forming Bacteria*

The growth of salmonellae is arrested at temperatures below 5.2°C and above 44-47°C. Whether they will actually grow at these temperature extremes depends on other factors; low pH or water activity narrows the range of growth. Staphylococci can grow at temperatures between 6.7°C and 45.4°C and enterotoxin production can occur at temperatures ranging from 10°C to 46°C. The lowest reported temperature permitting growth of *V. parahaemolyticus* is 3°C and the maximum 44°C.

### *(2) Spore-Forming Bacteria*

While the growth of proteolytic strains of *C. botulinum* is arrested at temperatures below 10°C it has repeatedly been confirmed that non-proteolytic E and F strains grow and toxins at temperatures down to 3.3°C. The minimum growth temperature for *C. perfringens* is 6.5°C but growth is slowed down considerably at temperatures below 20°C. No clostridia have been found to multiply at temperatures higher than 50°C. *Bacillus cereus* can multiply in the temperature range 7-49°C. Pathogenic bacteria may remain viable, but without growth, for a long time in refrigerated foods.

### *(3) Parasites, viruses, toxins*

These agents do not multiply in foods but may remain active indefinitely at refrigeration temperatures.

### *(4) Moulds*

The majority of fungal toxins may be produced in food kept at temperatures between 4°C and 40°C, but fungi that produce alimentary toxic aleukia can grow and produce toxin in the range of -2°C to -10°C with an optimum temperature for toxin production of 1.5-4°C.

## Freezing

### (1) Non-Spore-Forming Bacteria

Freezing not only results in arrest of growth but also in destruction of some cells. However, like salmonellae and staphylococci, *V. parahaemolyticus* shows better survival at low freezing temperatures. At -30 C, they may survive for longer than 4 months.

### (2) Spore-Forming Bacteria

While the vegetative cells of bacilli and clostridia are not much more resistant to freezing than non-spore-forming organisms, their spores are highly resistant.

### (3) Parasites

Protozoa are generally destroyed by freezing. *Trichinella spiralis*, *Anisakis*, and *Toxoplasma* cysts can be killed by exposure to freezing temperatures for long enough periods of time. The same is true for the intermediate stages of *Taenia* and *Diphyllbothrium latum* in fish.

### (4) Viruses, toxins, moulds

These agents are generally very resistant to freezing.

## Water Activity, pH, and Other Factors

Different types of microorganism have characteristic ranges of growth with respect to the water activity in foods. The latter is reduced by increasing the concentration of solutes, which can be accomplished by drying and/or the addition of agents such as sodium chloride, sucrose, glucose, glycerol, and propylene glycol. The type of agent used influences the response of microorganisms to variations in water activity. Values that are inhibitory to the growth of microorganisms do not necessarily destroy them or viruses or toxins. However, trichina and possibly other parasites die in

heavily salted foods. Minimum and optimum levels of water activity that favour the growth of different bacteria and moulds may be found in the report on which this article is based.

The effect of the acidity (or pH) of food on the growth of different organisms, etc., may be summarized as follows:

(1) *Non-Spore-Forming Bacteria*

Staphylococci can grow under aerobic conditions in food within the pH range 4.3-8.0 or higher, but enterotoxin production (with the possible exception of type C enterotoxin) does not occur at pH values below 4.5. The limiting acidity for anaerobic enterotoxin production is pH 5.3. Salmonellae can grow in the pH range 4.1-8.0 and *V. parahaemolyticus* in the range pH 4.8-11.0. Values below pH 4 are lethal to most vegetative cells of pathogenic food-borne bacteria. The lethal effect and the growth inhibitory effect depend on temperature, pH, and on the acids used.

(2) *Spore-Forming Bacteria*

Growth of *C. botulinum* in foods does not occur at pH values below 4.6. At this pH value the growth of *C. perfringens* and *B. cereus* is also inhibited although the latter may grow slowly at pH 4.4 in certain types of food. Bacterial spores die out slowly in foods with pH levels too low to permit growth.

(3) *Parasites, Viruses, Toxins*

Little or no information seems to be available about the effect of acids on parasites in foods. Some viruses are sensitive to acids but others are resistant. Most toxins are quite resistant.

(4) *Moulds*

Aflatoxins can be produced in grapefruit juice (pH 3.3) and at even lower pH values in laboratory media. The fungi neutralize (metabolize) the organic acids during growth.

Fermentation, often combined with other means (especially salt), is used for preserving many types of food. The main preserving effect of fermentation is due to acid production, but

other compounds inhibitory to food-borne pathogens may be formed by fermenting organisms. The growth of pathogens may be inhibited through competition for essential nutrients. The only effect of fermentation that can fairly accurately be predicted is the one based on acidity; the other effects are still not well understood.

Other factors in food processing or preservation, e.g. oxidation/reduction potential or the presence of carbon dioxide, exert small but important effects on pathogenic organisms in foods. The widespread use of plastic materials (with low oxygen permeability) for packaging has been discussed in recent years. Vacuum packaging prolongs the shelf-life of various products but does not offer protection against growth of all food-borne pathogens.

#### *Combined Effect of Preservation Methods*

The preserving effect of high and low temperatures, low pH, low water activity, irradiation, and curing salts is increased when these act together, as is very often the case in food preservation. The combined effect may be additive or there may be interaction producing a greater than additive total effect. These combined effects are difficult to predict quantitatively because of the complexity of the required experiments. Even in the case of cured meats where the combined effect of different treatments (each used at a subinhibitory level) is crucial, it is not possible to predict accurately the minimum changes required to ensure safety if any part of the treatment is reduced.

#### *Influence of Food Habits*

Microbiological hazards tend to be reduced by certain food habits, such as:

##### *(1) Pasteurization or Boiling of Milk*

In many tropical and subtropical countries, milk is boiled before consumption, thus reducing the risk of milk-borne disease. Where pasteurization can be enforced, the effectiveness of the

treatment must be carefully and continuously controlled. For small and rural communities, vat pasteurization is recommended in the initial stages. Modern methods of pasteurization (HTST, high temperature, short time; and UHT, ultra-high temperature) should be used in urban areas.

(2) *Use of Fermented Milk*

Fermented milk is a common food in certain parts of Asia and in central and southern Europe. The concentration of lactic acid in fermented milks is sufficiently high to kill or inhibit the growth of salmonellae, shigellae, and other food-poisoning organisms.

(3) *Prolonged Cooking of Foods*

Except when a heat-stable toxin is present, food that is adequately cooked and eaten while hot is safe. After cooking-prolonged storage without refrigeration must be avoided because heat-activated spores of *C. perfringens* and *B. cereus* may germinate and multiply.

(4) *Vegetarianism*

As meat, meat products, fish, and eggs are important media for food-poisoning organisms, the omission of these products from diets diminishes the risk of food-borne disease. However, the risk of infection with shigellae, *E. coli*, parasites, and other intestinal pathogens originating from vegetable foods remains.

*Importance of Health Education in Food Hygiene*

Preventive measures in all countries should include health education to discourage unhygienic food habits. Health education should start in the schools. Adult education may be provided in maternal and child health centres and teacher training colleges, as well as by mobile teams, radio and television broadcasting, and other means of mass communication.

Travellers, particularly those going to countries with a low standard of hygiene, should be given information on the precautions to be taken.<sup>2</sup> The inclusion of such information in travel brochures and similar literature, as is done by some travel agencies, should be standard practice; this information could be combined with details about vaccination requirements.

General measures for controlling food-borne microbiological hazards include the sanitary production of raw materials, cleaning and disinfection of food processing plants, and hygienic practices by personnel, especially when handling food.<sup>3</sup>

#### FOOTNOTES

1. Report of a WHO Expert Committee with the participation of FAO. *Microbiological aspects of food hygiene*. Geneva, WHO, 1976 (WHO Technical Report Series, No. 598).
2. Bailey, J. *Guide to hygiene and sanitation in aviation*. 2nd edition. Geneva, World Health Organization (in press).
3. Codex Alimentarius Commission. *Recommended international code of practice: general principles of food hygiene*. Rome, FAO and WHO, 1969. (Ref. No. CAC/RCP 1-1969) (under revision). ▲

#### CAJANAQUOTE

"His taste in cookery, formed in subterranean ordinaries and Alamode beefshops was far from delicate".

- Macauley  
(1800-1859)

BREAST OR BOTTLE FEEDING:  
IS THERE REALLY A CHOICE FOR THE THIRD WORLD?

by

A.W. Myres,\* Ph.D., MIBiol.

This article offers a brief résumé of current knowledge of the unique properties of human milk and at the same time emphasizes the crucial importance of breast-feeding in the Third World. It is not intended to add anything new to an already well documented subject but rather to summarize the salient features of the current breast vs bottle feeding controversy.

THE SCOPE OF THE PROBLEM

"The major health problems of mothers and children and high rates of mortality and morbidity, on a world-wide basis, result from three interrelated conditions: malnutrition, infection and the consequences of ill-timed, closely spaced and too frequent pregnancies without necessary health care. These problems do not occur in isolation from other unfavourable social and environmental factors. They are often associated with poor sanitation, low educational level and poor socio-economic conditions, including scarcity of health and other social services. Breast feeding has an important relevance to all these interlocking maternal and child health problems."<sup>1</sup>

---

\*Dr. Myres is a biologist with the Department of National Health and Welfare, Canada. Views and opinions expressed are those of the author and do not purport to represent those of the Department or of CFNI.

Footnotes and references are listed at the end of the article.

This statement by the Chief of the Maternal and Child Health Division of the World Health Organization serves to remind us of the crucial role that breast-feeding plays in protecting the health of infants in the Third World. In view of the growing literature on this subject it is timely to review the ways in which breast-feeding exerts its protective role.

#### *THE PROTECTIVE ROLE OF BREAST FEEDING*

There is a consensus that the major causes of death in young children are respiratory infections and diarrhoeal diseases and in most cases of deaths related to infectious diseases, malnutrition is an associated cause.\* The evidence for a protective role for breast-feeding in this malnutrition-infection cycle is convincing. Consideration of the results of a number of recent surveys clearly illustrate this point. For example, the Inter-American Investigation of Mortality in Childhood<sup>2</sup> found very marked differences in the pattern of mortality from diarrhoeal disease in the first few months of life when considered in relation to type of feeding practised. In this project 31.7% of infants breast-fed and not weaned died from diarrhoeal disease compared to 54.2% for those breast-fed less than a month. In a study in Chile of 1,700 mothers it was found that there were three times as many deaths among babies given bottles before the age of 3 months as among those who were wholly breast-fed.<sup>3</sup> The authors of a longitudinal study in rural Punjab reported that "virtually all infants died who did not receive breast milk in the first month of life."<sup>4</sup>

---

\*Editor's Note: In the English-speaking Caribbean malnutrition and/or gastroenteritis represents about 20% of all paediatric admissions and approximately 75,000 children out of an estimated population of 5 million are moderately or severely malnourished and should be receiving attention (Gueri, M. "Nutritional Status of Young Children in the English-speaking Caribbean"), CFNI 1977. See *Cajanus* Vol. 10, No. 5, pp. 267-281.



When environmental conditions and hygiene are satisfactory the advantages of breast-feeding in relation to infection may become marginal. However, in the vast majority of studies undertaken in unfavourable environmental conditions - and it must be remembered that this is the milieu of the majority of infants in the world - fully breast-fed infants have a lower incidence of diarrhoeal disease and other infections than do those who are bottle fed.

There has been a great deal of controversy over the years as to whether human milk does have anti-infective properties. Until quite recently it was thought that the higher rates of morbidity and mortality among bottle-fed infants were the result of poor environmental conditions. However, while this factor is of undoubted importance, much recent research has confirmed the presence in human milk of unique anti-infective factors. The factors and mechanisms by which human milk spares infants from infectious disease may be summarized as follows:

- (1) Human colostrum (first milk) is a rich source of immunoglobulins, particularly IgA, whose function is the protection of the gastrointestinal tract. Breast milk provides a continuing source of antibodies and this ensures a smooth transition to self-supporting defence mechanisms which are established in the infant in the latter part of the first year.
- (2) A specific growth factor in human milk (the bifidus factor) promotes the development of the characteristic microflora of the intestinal tract of the breast-fed baby, creating an unfavourable environment for the implantation of pathogenic bacteria and protozoa.

- (3) Other protective components of human milk such as lysozyme, antibody-producing cells and phagocytic cells play a role in the limitation of infection by certain bacteria.
- (4) Lactoferrin, an iron-containing protein present in human milk at a much higher level than in cow's milk, acts in concert with specific antibodies affording almost complete protection against *E. Coli* infection, the principal pathogen in the neonatal period.
- (5) The use of human milk saves infants from being exposed to ingestion of large amounts of pathogenic bacteria and protozoa, in localities where clean water and hygienic facilities are not available.
- (6) The nutrient composition of human milk, perfectly balanced according to nutrient needs, provides an adequate intake of all necessary nutrients, resulting in a good nutritional state which in itself affords protection against repeated episodes of infection.
- (7) The solute concentration of human milk (i.e. the concentration of those substances which must be excreted by the kidney in order to maintain the correct composition of the body fluids) is low in relation to the amount of water available for excretion. Hence, less water is required for excretion by the breast-fed baby than one fed cow's milk and the breast-fed baby is better able to tolerate stress on its water reserves particularly under conditions predisposing to water loss (e.g. elevated temperature, fever, infection).

While breast-feeding is increasingly being seen as indispensable for the nutrition and survival of infants it is not so widely recognized that breast-feeding plays an important role in moderating fertility. J.K. van Ginnikan of the International Planned Parenthood Federation in an extensive review of the impact of lactation on fertility has concluded that "although lactation is clearly less adequate as a birth-spacing method than modern contraceptives, it is evident that this practice can provide considerable protection against pregnancy for about a year. Thus in areas where prolonged breast-feeding is common and where no modern contraceptives are available, its use (and in particular, the use of prolonged full breast-feeding) as a birth-spacing method should be encouraged."<sup>5</sup> F.W. Rosa, consultant to the United Nations Fund for Population Activities has extended these studies to give a world-wide estimate of the protection from pregnancy afforded by lactation amenorrhoea which he estimates to be one-third more than the protection currently given by family planning contraceptive methods.<sup>6</sup> While this role should be recognized it is important to stress that breast-feeding should not be promoted as an alternative to contraception. Pregnancies that do occur during breast-feeding are especially hazardous for the nursing infant who is abruptly weaned from the breast without the availability of suitable supplementary foods.

Lactation is a physical function whereas breast-feeding is a form of maternal behaviour and thus variable, ranging from token breast-feeding to total adlibitum sucking. It is known that the duration of lactation amenorrhoea is affected by feeding behaviour, in particular by the amount of sucking afforded the infant. For this reason unrestricted breast-feeding delays ovulation more than partial breast-feeding. Therefore, one should emphasize that lactation on an individual basis cannot be considered a safe method of contraception although on a community level prolonged lactation will reduce fertility as a whole. This degree of protection by

lactation amenorrhoea is undoubtedly decreasing because of reduced breast-feeding and also because of a weakening of cultural taboos against post-partum intercourse, both these developments being widespread concomitants of the urbanization and industrialization that accompany population growth in less developed areas.

#### *THE EFFECT OF URBANIZATION ON BREAST-FEEDING*

Breast-feeding is the traditional and ideal form of infant nutrition usually capable of meeting a child's nutritional needs for the first 4-6 months of life. Furthermore, human milk is cheap and hygienic. Under some Third World conditions cow's milk is neither. The majority of mothers in developing countries simply cannot afford full-scale artificial formula or fresh cow's milk feeding. Data used in the PAG manual on feeding infants and young children show that the cost of artificial feeding for a 3 month old child in some developing countries consumes between 10 and 40% of the minimum wage.<sup>7</sup> All too often there is an attempt to "stretch" the formula by overdiluting it, resulting in malnutrition.

The national costs of wasting human milk are formidable both in terms of loss of human resources and in economic terms. Alan Berg, World Bank deputy director for nutrition has calculated the value of human milk in these terms. For example, in Chile where the proportion of infants breast-fed has declined sharply in the last decade from 95 to 5% the annual loss of human milk is equivalent to that produced by 32,000 cows. As Alan Berg reminds us "an unusual depletion of crude oil reserves of an oil-producing country of Asia or Latin America would be termed a crisis. Yet a comparable crisis involving a valuable natural resource and losses in the hundreds of millions of dollars, is going virtually unnoticed in many parts of the world."<sup>8</sup>

### *REASONS FOR THE DECLINE IN BREAST-FEEDING*

In view of the foregoing arguments we may well ask ourselves why there is a proliferation of bottle feeding. What are the reasons for this change in the pattern of infant feeding? The decrease in breast-feeding is largely an urban phenomenon and the reasons for the change are many and complex and for the most part are derived from Western cultural influences. These have been well documented elsewhere (see References) and it will suffice here to present a brief summary of the major influences.

#### *Status*

Like many things created in the West, the bottle in the Third World has become a status symbol. Bottle feeding is well established in the western world and has been, in large part, a successful replacement for breast-feeding although new concerns have been expressed in recent years concerning overfeeding and allergic reactions - conditions which are more likely to arise with bottle feeding.

#### *Social Change*

The move from traditional rural cultures to an urban way of life has strongly influenced the trend to bottle feeding. As women join the labour force they encounter many obstacles to successful breast-feeding often having no facilities or social encouragement to breast-feed. The adoption of Western attitudes to the breast, which is looked upon more as a cosmetic sex symbol than a functional organ, has also tended to reinforce the trend to bottle feeding.

#### *Confidence*

The key to successful lactation is confidence. The "let-down reflex" which controls the flow of milk to the mother's nipple is a psycho-somatic reflex and is easily upset by fear, pain,

uncertainty or embarrassment.\* A poor let-down leads to a dissatisfied hungry baby which further aggravates lack of confidence in the mother. This has been dubbed "the anxiety cycle". All too often the decision is made prematurely that the breast milk supply is insufficient or the milk 'does not suit' the baby and a bottle is given. The effect of the bottle is to further diminish the mothers' confidence and milk supply and to encourage the baby to accept more easily the milk from the bottle.

### *Health Professionals*

All too often the health professionals have played unwittingly a role in the decline of breast-feeding. Many of the present generation of doctors were taught infant feeding according to the Western school which meant an emphasis on artificial feeding. Other Western influences of importance are early separation of mother and baby, thus inhibiting the start of lactation which is so dependent on the sucking stimulus. In addition the rigid adherence to 4-hourly feeding schedules is counter productive in the early stages of lactation, being more related to professional convenience than biological logic. Routine bottle feeding in a maternity ward when viewed by unsophisticated eyes can constitute a powerful endorsement.

The medical profession is a key channel through which milk companies promote their products. Jelliffe has pointed out that many health professionals including paediatricians do not realize the effectiveness of their "endorsement by association" with bottle feeding. Much of the educational material used in clinics and hospitals is produced by milk companies. Whether intended or not,

much of this material will, to the illiterate, appear to endorse bottle feeding and its association with a hospital or clinic will tend to reinforce this impression.

### *Advertising*

Advertising and marketing of products for bottle feeding have probably been one of the most powerful factors contributing to the decline in breast-feeding in the developing world. In some countries commercial formulas are widely advertised in newspapers, magazines and on radio and television. In addition, manufacturers often use aggressive marketing techniques and try to influence health professionals to advise mothers to bottle-feed. This has been known for some time but it was not until 1968 that the subject really gained attention when Jelliffe described "commerciogenic malnutrition", the malnutrition caused by ill-considered promotion of infant foods in developing countries. A number of groups who felt the infant food industry was not acting responsibly took up the issue and gave it further publicity. Particularly note-worthy was the publication entitled *"The Baby Killer"* produced by the British Charity Organization, War on Want.<sup>9</sup> In May, 1974 the Swiss Third World Action Group published a German version of the British Report entitled *"Does Nestlé Kill Babies"*.<sup>10</sup> The ensuing action for defamation brought by Nestlé against the Third World Action Group resulted in world-wide publicity for the case. In 1975 Peter Krieg made a film called *"Bottle Babies"* filmed mainly in Kenya which vividly documents the malnutrition caused by bottle feeding.

On June 24, 1976 the verdict in the Nestlé case was handed down. The Third World Group was found guilty and fined about \$140.00 each. The verdict, however, related only to the title of the report. According to the judge this alleged a criminal act

which had not been proved. But, the judge also warned that unless Nestlé reviewed its sales practices these could be fairly called unethical and immoral.\*

In response to concerns over marketing ethics most of the important milk companies formed a council (International Council of Infant Food Industries) to implement restrictions on marketing of their products.

Unfortunately not all companies were allowed to participate for a variety of reasons but they did evolve a Code of Marketing ethics. One company felt that the code was not strong enough and decided to withdraw from the group and use their own code. These are all welcome signs that the infant feeding industry wishes to cooperate in preventing the misuse of their products.\*\*

#### *SUPPLEMENTING THE DIET OF THE BREAST-FED INFANT*

The foregoing has outlined the critical importance of breast-feeding for Third World Countries. Breast-feeding is the traditional and ideal form of infant feeding usually capable of supplying all of the infant's nutritional needs up to 6 months of age. At the same time it must be emphasized that even an abundant supply of breast milk cannot form the sole food for a growing infant after 6 months of age. It is essential that best use is made of cheap locally available foods for weaning supplements and therefore it is

---

\*Editor's Note: The court action ended with Nestlé withdrawing all charges related to the content of the original report and the Berne Group found guilty on the sole charge of libelling Nestlé in their translation's title. (Muller. "The Baby Killer". 3rd ed. 1977).

\*\*Editor's Note: In our view this wish to cooperate must be kept alive by continued vigilance and reinforced by legal sanction against unethical practice.





*Between 4-6 months the infant may be gradually introduced to a variety of foods prepared at home from inexpensive and locally available ingredients.*

[Photos © CFNI]

important for all health personnel to have a good knowledge of the available foods and their nutritional value. The Manual on Feeding Infants and Young Children<sup>7</sup> contains a collection of recipes from various regions of the world, for low cost meals which provide about one-third of the day's caloric needs and are of suitable protein value. Neither must the importance of maternal nutrition as a basis and starting point for sound infant feeding be neglected. Special attention should be given to protein intake. Animal protein, if available must be used and this should be reinforced by plant-protein foods in suitable combinations such as those described earlier for the weaning mixtures. Although the composition of human milk appears to be little altered by the plane of maternal nutrition the quantity of milk produced will decrease if the mother is severely undernourished. It is clearly undesirable that the mother's body should be further stressed in this way and it is of the utmost importance to emphasize the desirability of feeding the mother adequately.

M.C. Latham has aptly described how inappropriate Western development models may be in resolving these, the twin problems of malnutrition and infection, in the Third World - "The answer is not fancy hospitals...it does not lie in the elaborate manufactured foods...or expensive infant formulas. The need is not for over-trained doctors nor for advanced food technology." The answer lies in methods that although simple, are often difficult to implement in practice: (1) making best possible use for both mothers and children of locally available vegetable sources of protein in what



*Foods from the "family pot" suitably prepared using basic kitchen equipment, will eliminate the need for costly commercial infant weaning foods.*

[Photo © CFNI]

Cicely Williams has called "the intelligent exploitation of back-yard supplies", (2) bringing about a modest increase in cereal, vegetable and legume consumption by children which would reduce the prevalence of malnutrition, (3) and combining these measures with environmental and other controls to help reduce the incidence of infectious diseases. Unsupplemented breast-feeding during the first 6 months of life assures an adequate diet, protection against infection and has an important influence on fertility. Breast-feeding can be continued after the introduction of weaning foods at 6 months and can be an invaluable supplement into the second year of life. Indeed one might say with Platt "breast-feeding should be continued until something equally good can be substituted."<sup>11</sup>

Breast-feeding is undoubtedly a measure of great importance and value and should be encouraged in every possible way. In view of the present trend to bottle feeding in the developing world it is ironic to note that in the Western World, where the replacement of breast-feeding by bottle feeding has been largely successful, there is currently a revival of interest in breast-feeding. We seem to be passing through a cycle of change just as 40 years ago we started the change to bottle feeding. A similar resurgence of interest in breast-feeding is necessary in the Third World but we cannot wait 40 years for its effects to come about.

#### FOOTNOTES

1. Petros-Barvazian, A. "Maternal and child health and breast-feeding". *Mod. Probl. Paediat.* 15: 155-168, 1975.
2. Puffer, R.R. and Serrano, C.V. *Patterns of mortality in childhood*. Report of the Inter-American investigation of mortality in childhood. Washington, PAHO, 1973 (PAHO Scientific Publication No. 262).
3. Plank, S.J. and Milanesi, M.L. "Infant feeding and infant mortality in rural Chile". *Bull. Wld. Hlth. Org.* 48: 203, 1973.

4. Wyon, J.B. and Gordon, J.E. *The Khanna Study*. Cambridge, M.I.T., 1971.
5. van Ginnikan, J.K. "Prolonged breastfeeding as a birth spacing method". *Studies in Family Planning*. 5: 201, 1974.
6. Rosa, F.W. "Breastfeeding in family planning". *PAG Bulletin*. 5: 5, 1975.
7. Cameron, M.G. and Hofvander, Y. *Manual on feeding infants and young children*. New York, United Nations, 1971. Protein Advisory Group, (PAG Document No. 1.14.26).\*
8. Berg, A. *The nutrition factor*. Washington, The Brookings Institution, 1973.
9. Muller, M. *The baby killer*. 2nd. ed. London, War on Want, 1975.\*\*
10. Arbeitsgruppe Dritte Welt Berne. *Nestlé toetet babys*. [tr. Third World Group, Berne, Does Nestlé kill babies]. Berne, Arbeitsgruppe Dritte Welt, 1974.\*\*\*
11. Platt, B.S. "Infant feeding practices: Breastfeeding and the prevention of infant malnutrition". *Proc. Nutr. Soc.* 13: 94, 1954.



---

Editor's Notes:

\*A new edition has been published and is reviewed in this issue.

\*\*The 3rd edition with a new foreword was published in August 1977.

\*\*\*In this translation of War on Want's report "The baby killer" (No. 9 in footnotes) the title, introduction and summary were changed and a short chapter on infant nutrition in England omitted.

## REFERENCES\*

- Cottingham, J. (comp. and ed.) *Bottle babies: A guide to the baby foods issue*. Carouge, Switzerland, Women's International Information and Communication Service, 1976.
- Greiner, T. *The promotion of bottle feeding by multi-national corporations: How advertising and the health professions have contributed*. New York, Cornell University, 1975. (Cornell International Nutrition Monograph Series No. 2).
- Jelliffe, D.B. and Williams, C.D. *Mother and child health: Delivering the services*. Oxford, Oxford University Press, 1972.
- Morley, D. *Paediatric priorities in the developing world*. London, Butterworths, 1973.
- Muller, M. *The baby killer*. 3rd. ed. London, War on Want, 1977.
- "Recommendations on policies and practices in infant and young child feeding and proposals for actions to implement them." *PAG Bulletin*. 5(1), March 1975.

---

\*Editor's Note: For Caribbean readers of *Cajanus* we would add the CFNI Library which will respond to both calls and letters as well as enquiries made in person.

▲

## NEWSPAPER CLIPPINGS

### TRINIDAD SCHOOL FEEDING PROGRAMME TO BE BASED ON FOOD FACTORIES *From The Express, Trinidad, 12 February 1978*

Large food factories designed to provide up to 40,000 meals a day, based on models operating in several overseas countries are included in plans drawn up for the proposed School Feeding Programme in Trinidad.

Areas listed as suitable for the siting of these factories are the Mucurapo lands, Pleasantville and Curepe. The need for such factories is outlined in the Task Force's second report to the Cabinet submitted in January 1978. According to the Plan, the factories' output will be supplemented by school canteens preparing and serving meals along cafeteria lines, small school kitchens run by caterers, cooperatives formed by parents and teachers and private caterers or voluntary organizations.

As the Programme develops, the Task Force sees as one of its responsibilities, the need to examine each school and recommend an appropriate system.

The importance of an accelerated programme of land allotment to farmers and the introduction of a system of contract buying of all produce is also emphasized. The Task Force proposes to explore this area further in conjunction with representatives of the Ministry of Agriculture, Lands and Fisheries and the UWI Faculty of Agriculture. Programmes of farmer education in the full-scale development of such projects as rabbit rearing and soyabean production, both highly economical sources of protein, are also recommended.

The Task Force estimates that some 90,000 pounds of beef, pork, chicken and fish; 80,000 pounds of fresh and frozen vegetables; 18,000 pounds of legumes; and 45,000 pounds of rice, macaroni, potatoes and other staple carbohydrates will be needed to feed the 300,000 children at the Nation's schools.

"Whereas it is expected that initially the greater proportion of this food would have to be imported, it is however desirable from the outset to maximize local production and supply" the Plan continues.

It is yet to be decided whether there should be one massive central storage facility or several regional facilities. The need is also seen in the Plan for some degree of storage within the school itself. "Whatever the system decided upon, there must also be developed an efficient recording, accounting and security system to ensure against pilferage," the Cabinet has been reminded.

A strong recommendation has also been made for the Programme to be placed under the control of an autonomous School Nutrition Control Board designed along the lines of other wholly owned government institutions. ▲

### SCHOOLS MOVE AHEAD IN FOOD PLANTING

*From the Guyana Chronicle, 19 November 1977*

Several schools are in the forefront of planting food to improve national needs and to help augment funds to provide necessary school requirements.

Students of Strath Campbell Government School on the East Coast Demerara, Mahaicony Branch Road have harvested a rich crop of rice from lands around the school, as the result of their first cooperative venture. Earlier in the year, the idea had occurred to the teachers that the idle land could be used. Most up-to-date methods of husbandry, regular inspection and application of the right inputs were successfully utilized.



*Planting and harvesting their own crops can be an important stimulus to agricultural self-sufficiency among school-children, and can also be a means of gaining nutritional awareness.*

Harvesting of a wide range of vegetables and greens from a four-acre farm plot at the Manuranau School in the Rupununi is in full swing. Members of the village council assisted in ploughing the land and the agricultural teacher said the students are working enthusiastically on the project.

Thirty-six students of St. Joseph's High School have reaped a variety of crops including ochroes, bora, callaloo and other food-stuffs. These were sold and the money was used to purchase school equipment and tools.

Uitvlugt Government School on the West Demerara is going ahead expanding its cultivation plot. After a rich harvest of greens, pupils are now reaping quantities of pigeon peas and are joining in marketing the crops, sales of which help the school to obtain necessary materials and equipment. ▲



## REPORT DENOUNCES BOTTLE FEEDING

*From the Jamaica Daily News, 28 September 1977*

Bottle feeding is killing Jamaican babies, and crippling the pockets of parents.

A report signed by four doctors of the Tropical Metabolism Research Unit at the UWI said that a half of the children admitted to hospital there are suffering from malnutrition and gastro-enteritis, which are closely related to bottle feeding. They said that a half of the hospitalized young children who die, do so from these conditions.

The Report said that it has recently been shown that nearly all the feeds being given to a group of babies were heavily contaminated with germs. It estimated that it would cost J\$7 a week to properly feed a four month baby on proprietary baby milk and pointed out that 52% of the population earned less than \$20 a week.

The researchers called for a return to breast-feeding for at least the first four months of life. They concluded that: "This is not an idle matter. It involves the life and death of many of our young children. Those who are lucky enough to cheat death face the risk of the ravages of severe malnutrition." ▲

## WINNERS OF NUTRITION COMPETITION ANNOUNCED

*From The Trinidad Guardian, 9 February 1978*

A Guyanese trio has shown the way to preparing low-cost, nutritious meals with ingredients available in the Caribbean.

The challenge, thrown out by the Nutrition Association and the Guyana Consumers Association, was to find a way of preparing tasty dishes, using Guyanese inputs and keeping the cost to a minimum.

The Nutrition Association has already vouched for the nutritional value of the meals, which use common ingredients such as pumpkins, flour, eggs and shrimps and cost no more than G\$2 each.

The sole male winner, stumbled on his "*Shrimp Flavoured Bake*" by accident - the result of having too many shrimps. So one day, he said, he dried the shrimp shells, ground them, seasoned then with celery, added eggs and stirred in some flour. He put his concoction in the oven and was satisfied with the taste!\*

#### FOOD VENDORS FORBIDDEN TO SELL FLAT ON THE GROUND

*From Guyana Chronicle, 20 November 1977*

The Mayor of Georgetown has threatened to carry out a drive to remove all vendors who sell on the ground in the vicinity of Bourda Market causing congestion to traffic and endangering the health of citizens. The Mayor said he was getting very concerned about the conditions prevailing in the area around the market and its extension called Bourda Green.

"We have advised from time to time of the dangers inherent in the selling of fruits and vegetables on the ground since it is felt that this method of selling produce is likely to result in an increase in gastro-intestinal diseases", the Mayor said.

It was because of the situation that the East La Penitence/Ruimveldt Market was constructed and there is adequate space in that market to accommodate several of those who are selling on the ground outside of Bourda Market.

---

\*Editor's Note: Details of the prize recipes will be published in our next issue.

## GETTING CARIBBEAN FOOD PLAN TO WORK

*From The Advocate-News [Editorial], Barbados, 12 November 1977*

...The concept of a Caribbean Food Plan will not be easy to implement by any standards. We have been running into all sorts of difficulties with our national food plans, for a start. If the idea is to reconcile the national food efforts with regional aims it can be appreciated that a number of problems will be inherent in these objectives.

The constraints the Region faces over the movements of goods is a vital item if the food plan is to make sense. If the farmers are encouraged to grow certain crops and then find that, in spite of regional demand, their crops cannot move with ease throughout the territories to meet that demand, their efforts will end in frustration.

At the moment it is no secret that fruit, for example, rot on the ground in a number of the territories while others are experiencing shortages. We cannot always get these fruit to where they are needed. Before we can get the regional food plan moving smoothly the transport problem will have to be tackled and solved.

It is still ironic that while we see the need to cut down on our food import bill from outside the Region, we can often obtain food from extra-regional sources with greater ease than from within. It is an enormous challenge to our shipping and other transport facilities, not to mention our marketing techniques." ▲

## BAHAMIANISING THE DIET

*From The Nassau Guardian [Editorial], Bahama, 16 November 1977*

The Minister of Agriculture and Fisheries has urged Bahamians to change their eating habits to use more locally produced items and less imported foods.

Bahamians, he said, needed to learn to eat more fish and less imported beef; more pork and less New Zealand lamb; more grits\* and less imported frozen foods; more locally grown potatoes and less imported rice.

There is much to be said for the Minister's point of view. And it may be, too, that we would be healthier if we are able to have a balanced local fare from which to choose our diets....

...But even while we wish to agree with the Minister of Agriculture and Fisheries, it seems that, if possible, the enticement of a reduction in the prices of fish, crawfish, conch and crabs would encourage more people to eat more of these foods. The same would apply to locally grown foodstuffs, fruit and native meat. Because it seems that, so long as there is the kind of high-powered advertising to influence people to buy imported brand name products, the local populace is not likely to heed - in a significant way - any call to support local production: unless it can be demonstrated to them that they would benefit financially as well as otherwise, by a switch from the traditional diet, heavily weighted with imported foods, to a diet utilizing a much greater variety of Bahamian-produced items.

Full self-sufficiency appears distant, but if a serious start was made now to encourage a change in local eating habits it perhaps would be much easier to guide the change by stages. Yet the kind of change which the Minister would like to see initiated, demands a degree of dietary discipline; and it would be helpful if, from the level at which the Minister operates, example could enhance precept.

---

\*Editor's Note: Grits - Ground hominy (maize kernels degermed and hulled).

▲

## CAREFUL CHECKS ON FOOD AND DRUGS

*From the Guyana Chronicle, 12 November 1977*

The new Food and Drug Act has been in force since 1 November 1977. The agency which is responsible for the implementation and enforcement of the new regulations is the Analyst/Food and Drugs Department; formerly known as the Department of the Government Analyst.

The law aims at protecting the consumer and is designed to prevent the adulteration and contamination of food and drug supplies. The Analyst/Food and Drugs Department staff will ascertain whether the foods are adulterated, harmful, unsound or unwholesome and whether the drugs are adulterated or deteriorated.

It also aims at making sure that there is honesty and fair dealing in the consumer's interest by the Department's policing of false and misleading claims for food and drugs on labels and in advertisements.

The Analyst/Food and Drugs Department was actively involved in revising the Food and Drugs Act and will continue to draft more Food and Drugs Regulations which are suitable and are required to meet the changed local conditions.

Numerous types of foods are being analysed to determine whether they are adulterated or unwholesome, including canned foods, jams and jellies, tomato ketchup, curry powder, milk, edible oils, cassareep\* and peanut butter. This testing programme is being expanded.

A check is also carried out from time to time on local flour to ensure that it is enriched properly.

---

\*Editor's Note: Cassareep - the juice of the bitter cassava or manioc. It is boiled to a thick syrup and used as a base for sauces.

▲

## NEWS BRIEFS

### DR. HALFDAN E. MAHLER NOMINATED TO SERVE SECOND TERM AS DIRECTOR-GENERAL OF WHO

On 12 January 1978 the Executive Board nominated Dr. Halfdan E. Mahler, by acclamation, to serve a second term as Director-General of the World Health Organization.

Final action to elect the Director-General will be taken by the Thirty-first World Health Assembly in May 1978. ▲

### PRELIMINARY RESULTS ON ANAEMIA STUDY REPORTED

A seminar on "Anaemia Surveillance in Cornwall" was presented on 26 January 1978 at CFNI by researcher Mr. Roger Andrianasolo. A native of Madagascar, Mr. Andrianasolo is a PAHO/WHO fellow at Cornell University where he is pursuing doctoral studies. Part of his field work is being carried out at CFNI, where he is conducting a study to evaluate the effectiveness of an iron and/or iron and folic acid supplementation programme for the treatment of anaemia in pregnant women attending prenatal clinics in the Parish of Cornwall. Mr. Andrianasolo is also checking the usefulness and practicability of a field method for screening haemoglobin levels of pregnant women attending prenatal clinics in that area. His preliminary results are encouraging in that the incidence of anaemia was decreased in the test group as compared to the control group. Also, the field screening test for determining haemoglobin levels is proving to be simple and accurate. ▲

### SEMINAR ON GOITRE

A seminar on "Goitre in Argentina" was presented by Dr. Jorge Pedro Salvaneschi on 1 February 1978 at CFNI (Jamaica Centre). Dr. Salvaneschi is Chief, National Program for the Control of Goitre in Argentina, and was at that time on a brief visit to CFNI. ▲

### CFNI CONDUCTS MARKETING SEMINAR

A seminar on the theme "Food Marketing for Better Nutrition" was held from 13-15 March 1978 at CFNI (Trinidad Centre).

It was designed to help senior government personnel gain an awareness of the nutritional implications of food marketing policies and practices, particularly for low-income consumers.

Attending the Seminar were representatives from the CARICOM Secretariat and from the Ministries of Trade and Industry, Finance and Planning, Health, Agriculture and Consumer Protection in different Commonwealth Caribbean countries. Discussions included nutritional requirements and problems of the Region in relation to food availability and the structure and organization of Caribbean marketing systems. Guidelines and strategies for the improvement of marketing systems in the interest of better nutrition were also developed during the Seminar. A report will be issued later this year. ▲

## JAMAICA SOYA PRODUCTS INDUSTRIES OPENED

Jamaica Soya Products Industries Ltd., which will process soya beans into meal and soya oil, was opened on 15 December 1977. The factory has already started supplying oil and soya meal to local manufacturing industries and has exported its first shipment of meal. It is hoped that the presence of the factory will stimulate both local production of soya beans and the growth of food industries based on soya. ▲

## TASK FORCE TO TACKLE SCHOOL MEALS PILOT PROJECTS

The Trinidad School Meals Task Force has announced that it is ready to proceed with its first set of pilot projects which are designed to accommodate existing conditions while testing the effectiveness of proposed solutions.

The first project involves preparing 8,000 cold meals and 500 hot meals daily in the kitchens of the Convention Centre, Chaguaramas for distribution to schools along the Western Main Road as far as the Mucurapo complex.

Bulk storage of foodstuff will be provided by the Central Marketing Agency and the Hotel School, and the John S. Donaldson Technical Institute will provide a crash course for cooks and assistants.

Other pilot projects include expanding existing canteen facilities at the John S. Donaldson Technical Institute, expanding existing school kitchens and utilizing facilities available in communities for food preparation. ▲



## CFNI STAFF MEMBER TRANSFERRED

Miss Manuelita Zephirin, CFNI Public Health Nutritionist/Dietitian has been transferred to Barbados. Since 20 December 1977 she has been based at the PAHO/WHO Office, Jemmotts Lane, Bridgetown, Barbados. ▲

## CICELY WILLIAMS AWARDED CERES MEDAL

Jamaican-born nutritionist and paediatrician Cicely Williams has been honoured with a Ceres medal which depicts her. Since 1971 the Food and Agriculture Organization (FAO) has been issuing medals featuring a distinguished woman as the Roman Goddess of Agriculture to highlight the important role of women in dealing with the world food problem.

Dr. Williams, who in 1975 was awarded the Jamaican Order of Merit, has devoted more than 50 years to nutrition in maternal and child health. She began her major work in Ghana where she studied protein calorie malnutrition\* in infants and discovered the true meaning of the word "kwashiorkor" which she introduced into medical literature. ▲

## EFFECTIVE MARKETING STRATEGY FOR PORK BEING PLANNED

The Data Bank and Evaluation Division of the Ministry of Agriculture, Jamaica, is carrying out a pig census to secure information for the planning of "an effective marketing strategy"

---

\*Editor's Note: Also termed protein energy malnutrition (PEM).

for pork and pork products. Such a strategy will enable agricultural planners to anticipate gluts and shortages, and to take corrective action.

In the event of surplus pork and pork products, efforts would be made to contact overseas markets, and in the case of shortages, there would be the re-allocation of resources, such as money, in the form of credit so that the country could maintain its position in self-sufficiency. Pork is one of the few meat products in which Jamaica has attained some measure of self-sufficiency. ▲

#### CFNI PARTICIPATING IN SCHOOLFEEDING PROGRAMME SURVEY

A sociological and nutritional survey is being undertaken by Nutrition Products Limited (NPL), in Jamaica, in conjunction with the U.W.I., Department of Sociology, Mona, and with the assistance of various other agencies such as CFNI, the Nutrition Department of the Ministry of Health and the School Health Service of the Kingston and St. Andrew Corporation.

Three private firms have also given financial assistance to the programme. The survey is designed to identify such aspects as eating habits and attendance patterns of the children and how much of the products are taken home to feed other members of the family. It will also provide a more scientific basis for the operations and future expansion of its schoolfeeding programme.

NPL is the Government-owned company which supplies lunches to several Corporate Area Schools, daily. At present, NPL serves 135 schools ranging from all-age, primary, basic and infant and day care centres. ▲

## DO YOU KNOW TALC?

The TALC Foundation is a sub-unit of the Tropical Child Health Unit of the Institute of Child Health, University of London, whose objective is to raise the standard of child health in developing countries. TALC (Teaching Aids at Low Cost), a self-supporting non-profit organization, is responsible for the teaching activities of the Institute of Child Health. Its major activity is selling self-help teaching aids that are suitable for both students and teachers in developing countries. They include slides, arranged in sets of 24, with accompanying scripts (some also in Spanish), covering such subjects as malnutrition as seen in Indian children; care and development of the newborn; protein-calorie deficiency, breast-feeding; and many other aspects of development, conception and the impact of certain diseases on child development.

More recently, TALC has compiled a list of low-priced books and booklets produced in developing countries that are very useful to medical assistants. For more information about its activities and to order materials contact:

Dr. David Morley  
Institute of Child Health  
University of London  
30 Guilford Street  
London WC1N 1EH  
United Kingdom (England)

*Cajanus* announces with regret the death of Mrs. Shirley Pascall, a CFNI secretary, based at the Trinidad Centre. We extend to the members of Mrs. Pascall's family our sincere sympathy and hope that they will be comforted in their loss.

## BOOK REVIEW

### MANUAL ON FEEDING OF INFANTS AND YOUNG CHILDREN

(2nd Edition). Cameron, Margaret and Yngve Hofvander. New York, United Nations, 1976.

The publication is an invaluable guide in the area of homemade weaning foods and is addressed to professional groups who have a basic knowledge of nutrition, child health and home economics, such as physicians, nurses, teachers, nutritionists, home economists, but primarily those *without* specific experience in the field of young child nutrition. It is a considerable improvement upon the justifiably popular first edition. Little wonder that authorship is shared by a paediatrician and a home economist - a rare combination but a most practical one.

Although the emphasis is on weaning foods, advice on child care in general, the fundamental importance of breast-feeding, factors which affect normal growth and development and simplified methods of measuring are given ample coverage.

The subject matter is dealt with in a practical, moderately simple style and thus provides appropriate, useful knowledge on preventive treatment and improvement in the health and food of infants, young children and their mothers. Two important items of information - giving the young child enough food of the right quality, and offering semi-solid foods no earlier than 4-6 months - are reiterated.

In recommending combinations of food and simple methods of measuring them, consideration has been given to energy and nutrient needs, income and degree of literacy. There could therefore be few questions as to the implications for the use of this book in developing countries.

In the chapter on 'Recommended Mixes for Conventional Meals' the authors have given quantities in gram-weight of the edible portion, for ready conversion by the health worker into the local

household measure or volume. This is a good idea, especially now that many countries are looking toward metrication. A conversion table is also included in Chapter 9 of the publication.

However, while it is appreciated that there are wide variations in food preparation practices, the authors have made no attempt to comment on and even single out those which are non-conservative of nutrients, and make a plea for their improvement. I refer specifically to statements like "wash rice thoroughly once or twice"; "heat fat and brown meats"; extended cooking times (as in the case of maize flour cooked for 45 minutes); and the cooking of green vegetables in a large amount of water which is discarded in the end.

Also, the definition of the terminology "multimixes" is given as consisting of 3 main ingredients: "the staple food, beans, and whatever animal product is available". Elsewhere in the text a cooking time of 2 hours is stated for beans. It leads one to the question - while in theory it is highly desirable to incorporate beans, primarily where they are available and low cost - is the definition or the exercise a practical one?

Special attention must be drawn to Chapter 16 'Outline Plan for a Local Edition'. It provides an invaluable tool for planners, clearly indicating the precise and thorough manner in which the authors have endeavoured to facilitate the work of health workers in developing countries.

It is hoped that the publication will have the circulation it justly deserves and that respective local editions will indeed be compiled and shared internationally where feasible.

Versada Campbell  
Principal Scientific Officer  
(Food and Nutrition)  
Scientific Research Council  
Jamaica

▲

## CAJANAQUOTE

"Food is a political right,...Our own positions as leaders depend on guaranteeing this right. Many of us began our careers with slim waistlines and good intentions. Now we are part of a privileged group, circling the groaning tables of international diplomacy. It is therefore incumbent on us to stay aware. There is hunger and malnutrition in my own country, in other lands; it can come upon us very swiftly...

..."The poor nations are right to expect a genuine reinforced effort from the richer nations but they must work toward their own balanced agricultural development. No country has developed a powerful economy without strong agriculture...

..."The basic human need is for a filled bread basket, a bowl of rice or millet, and for the balancing nutrients of greens, protein, fruit and milk. Our larger objective is to create a global food system, integrated enough to respond to the rapidly changing conditions in agriculture, and yet producing an absolute increase in the total amount of food so that there is enough to go around. Never before in history have these goals been so attainable and so necessary for the survival of us all. Food security is not just bread for the hungry, it is some guarantee of peace for the world..."

- Andrew Young  
U.S. Ambassador to the U.N.

McDougall Memorial Lecture  
19th session of the  
Conference of the Food and  
Agriculture Organization  
of the United Nations, 1977.

## FROM THE EDITOR

### THE RIGHT TO KNOW

*Cajanus* as of this issue, has changed its name to *Quarterly*. This means that it will now be issued four times a year rather than bi-monthly. We hope this will enable us to bring our readers, on a prompt and regular basis, four high-quality issues which will continue to inform, interest and stimulate.

If you haven't yet filled out (or mailed) the questionnaire which we sent in the last issue, please do so now. Thank you for responding to our request to help us determine *Cajanus*' usefulness, and at the same time update our mailing list. We hope that the improvements reflected in *Cajanus* as a result of your responses will help us come closer to our goal of satisfying 100% of our readers 100% of the time!

By now everybody recognizes that there's an urgent need for honest and effective nutrition education of the public. A range of methods exist, some structured and formal, others more innovative and experimental. But all based, on not only imparting information, but also achieving definite behavioural changes on the part of the recipients.

The bulk of this issue is devoted to a delightful account of a health and nutrition communication project in Guatemala. We wanted to share it with you since we felt that, in some respects, the situation closely parallels our experience in the Caribbean. We also believe that the techniques and strategies employed could be successfully applied - with adaptation - in our society.

Happily, though, there's been an increase in media coverage of nutrition information. In Jamaica, through an active, well-funded communication programme which is described on page 198, nutrition information is being conveyed to consumers through press, radio and T.V. and at the community level.

Yet deficiencies in media efforts do exist. Announcements and advertisements about food products, while satisfying the consumers' traditional needs for information on taste, cost and convenience of foods, still fail to raise their level of nutrition consciousness, as we discuss on page 146. Myths, misconceptions and misinformation still pervade much of the nutrition information disseminated in the pages of our national newspapers. All those involved in the struggle against malnutrition, at whatever level, must accept the responsibility of ensuring that *only* factual and unbiased information be presented, as a health professional has done on page 149. This will help to create a new consumer - sophisticated, aware, intelligent, able to make meaningful and informed food choices and ultimately, we hope, better-nourished.

Please continue reading *Cajanus*...sharing it with friends... talking about it...and most important, taking time to comment on or question what you read about. We need your letters!

THE EDITOR

▲

#### CAJANAQUOTE

"...selling methods which play upon the buyer's susceptibilities, which use against him laws of psychology with which he is unfamiliar and therefore against which he cannot defend himself, which frighten or flatter or disarm him - all of these have nothing to do with his knowledge. They are not informative; they are manipulative..."

- Baran, P.A. and Sweezy, P.M.  
In "Monopoly Capital"  
Penguin, 1968, p. 117.



## TOPICS AND COMMENTS

### DEVELOPMENT OF NEW FOOD PRODUCTS: NUTRITIONAL CONSIDERATIONS

A release announcing the launching of a new range of products by a Jamaican food manufacturing company recently arrived on our desk.

The two types of products described are seasoning salts and soups which were selected on the basis of their traditional popularity in Jamaican kitchens.

Individually packaged at J\$0.13, the seasoning salts are available in eight flavours (plain, celery, curry, garlic, thyme, onion, black pepper and hot pepper). The soups include Beef with Star noodles, Beef with Ribbon noodles, Alphabet Soup, Thick n' Spicy Chicken and Fish Tea. As the release states "Early indications are that all these varieties have been well-received by the consumers, particularly the Fish Tea which is expected to be a 'smash-hit'". It was also announced that not only local ingredients but also local packaging materials have been utilized in the manufacture of these products. In addition, it is claimed that the development of these products, in response to consumer need, has helped to provide employment for over 50 additional persons specifically assigned to the task of food preparation.

We felt that this report raised some very important issues regarding the promotion and marketing of food commodities. Is there an educational intent in the promotion effort? Are the products aimed at the general consumer...or at the poor? So many thought-provoking questions emerged that we asked CFNI staff-members to comment. You may be interested in some of their thoughts on the nutritional implications of product development. We would be interested to hear some of your own!

1. I think it is admirable to develop, produce and market food products using local ingredients. I also understand why the choice of product is at least partially determined by its "saleability", appeal to consumer tastes, ease of production, etc. The primary question asked is "Will it sell?"

It is too bad, nevertheless, that nutritional quality and nutritional needs are often omitted from the decision factors, or at best given short shrift. The constant dilemma is how to choose for production, distribution and sale a food product that meets the business criteria for profits, plus the nutritional criteria for consumer well-being.

It would be interesting to know if the company plans nutritional labelling of the products...or discussion of nutritional contributions (if any) of the new products in its press releases or advertising. Can the consumer find out easily if the soups, for example, make any sizeable protein contribution...is the Thick and Spicy Chicken, thick with chicken or with starchy thickening agents...does the beef with noodles have more beef than noodles? equal parts? or just noodles with beef flavour extracts?

Could nutrition be used as a selling point for new foods? Is it already being used...with success or without?

2. Creative, vigorous, even well-funded nutrition education campaigns will be exercises in futility unless there is action on other fronts. Food companies, which produce bad foods along with the good, need to be controlled by consumer pressure, competitive pressures and even government regulations where indicated. Should not food corporations act according to society's best interest as well as self-interest?

3. In regard to the seasoned salt products, were these truly developed because of a consumer "need"? What about salt intake in the Region? There may not be enough data to support a thesis that most consumers here already get plenty of salt...it would be helpful to have data on salt consumption and also on incidence of hypertension in the area. Is someone working on this in research?

(Joan Peters, Nutrition  
Educator, CFNI)

*Nutrition Educator's Note: 1 cup of beef noodle soup, made from a dehydrated mix, may contain 420 mg. of sodium; 1 cup of chicken noodle as much as 578 mg. sodium.*

- Values from USDA Handbook  
No. 8 "Nutritive Value of  
Foods"

On the other hand, any enterprise that creates fifty new jobs, enabling the new employees to improve their lot, including their nutritional well-being, is praiseworthy, providing the selling of the product does not include publishing false nutritional incentives to buy. If the market for these new products is the relatively well-off section of the population, I have no quarrel. Only when the poorer people are induced to squander their food dollar on useless junk by claims (false) of nutritional benefit, do I think that the value of the jobs created must be seriously discounted.

(Peter Jutsum, Systems Analyst,  
CFNI)

## MORE ON THE BABY FEEDING ISSUE!

*Editor's Note: An editorial published in the Jamaican press entitled "The Feeding of Babies" elicited the following comments\* from a medical practitioner, who wrote on behalf of the Paediatric Association of Jamaica, to correct some of the "misleading statements" made. We reproduce his letter here:*

"...You state that 'the prime virtue of breast feeding is that the milk is perfectly clean'. While it is true that one of the virtues of breast milk is that it is perfectly clean, its prime virtue is that nutritionally it is the most perfect food for a young baby yet devised. In addition, it contains substances which protect the baby against infections, especially gastroenteritis (diarrhoea and vomiting).

"You make the false statement that 'it is clear from recent enquiries and surveys that breast feeding over long periods has become too arduous, even impractical for mothers of the under-privileged section of society'. Which enquiries and surveys? We would be grateful for a copy of these reports.

"What enquiries and surveys have shown is that breast feeding has become unfashionable and that this attitude has been contributed to greatly by widespread commercial advertising of artificial milks.

"You state that 'we would like to see more serious and sustained study made of types of artificial feeds adjusted to be perfectly suitable to every individual baby'. This is exactly what the commercial milk companies have been trying to do for many years now.

---

\*Adapted from a letter to the Editor from Dr. Keith McKenzie, President, Paediatric Association of Jamaica, in "The Sunday Gleaner", 13 February 1978.

"Two big problems with artificial milk are that (1) it can only be used to feed babies successfully when the mother can afford to buy enough tins of milk to give it just as directed. There should be no attempt to 'stretch' the milk by diluting it too much with water, as is so frequently done in Jamaica because of poverty. 'Stretching' the milk results in the development of malnutrition. (2) It has to be kept clean and free of germs, otherwise baby will develop gastroenteritis (diarrhoea and vomiting) as has happened in many cases.

"We are convinced that the way to good nutrition for the babies of Jamaica is to put into practice a policy of 'breast is best'.\*

"Full time breast feeding of babies under age four months should be the aim, with appropriate maternity leave being granted in order to achieve this as early as possible.

"As opinion leaders, doctors will have to do much more to make breast feeding fashionable. Nutrition education in this regard should start from primary school so that long before any pregnancy the prospective parents are mentally attuned to the importance of breast feeding."

---

\*Editor's Note: See Newspaper Clipping on page 198 of this issue which reports on the Jamaican Government Nutrition Education/Communication Campaign.

# THE COMMUNICATION FACTOR IN HEALTH AND NUTRITION PROGRAMMES:

## A CASE STUDY FROM GUATEMALA\*

by

*Royal D. Colle and Susana Fernández de Colle\*\**

Modern technology has provided us with opportunities to communicate with millions of people simultaneously. Satellites hovering thousands of miles out in space make it possible to send information into geographically isolated rural villages in India, Iran, or in the Canadian Northwest Territories. It is a drama that just a few short years ago was only dreamed of.

But there is another communication drama unfolding. It is the re-discovery of using simple technology to extend the communication powers of those people who work on the village level, attacking problems with solutions patterned for a particular geographic and cultural setting. This approach is needed to complement the "mass" approach inherent in the use of very sophisticated and expensive technology.

We are concerned with information -- not because it alone can solve problems -- but because it is a crucial part of helping people understand why they have problems, how they can get help, and how they themselves can contribute to ameliorating conditions through their own efforts.

---

\*Edited and abridged with permission of the authors from "The Communication Factor in Health and Nutrition Programs: A Case Study from Guatemala". A teaching unit for the World Health Organization, Geneva, Switzerland.

\*\*Royal D. Colle is Professor in the Department of Communication Arts, Cornell University, U.S.A. He has served as a consultant on communication aspects of rural development in Asia and Latin America.

Susana Fernández de Colle is an independent communication consultant who has worked on rural development projects for the Government of Guatemala, the US AID and other agencies.

## COMMUNICATION AND PREVENTION

The problem of improving the living conditions of the large proportion of the world's population living in developing nations involves diagnosing sometimes unfamiliar situations. It often involves organizing, collecting and dispensing resources. It usually involves reaching, convincing and motivating people. A key element running through this whole process is communication.

The importance of communication can be seen in many ways. For example, it is generally acknowledged that using *preventive* methods of improving health and nutrition conditions is a more realistic strategy than is using curative methods. The world simply does not have enough suitably trained professionals or paraprofessionals to carry out treatment-oriented programmes and make a significant impact on the total health picture. A recent World Bank report states the situation succinctly:

*Even under very favourable circumstances, curative health care can do little to alter the incidence of disease, although it can reduce its harmful effects. Curative health care systems will, therefore, benefit the population principally by lessened effects rather than lessened incidence of disease, unless there is a strong emphasis on preventive health in the services offered.<sup>1</sup>*

A preventive health system implies not only the provision of resources such as vaccines, nutritious foods, and materials for developing sanitation facilities, but also an inclination and ability on the part of people to use these resources in the proper way. That this is no simple task is illustrated by stories that tell of people ignoring easily available help for their problems. For example, vitamin A deficiency prevails in Java, even though vegetables are commonly available to low income families. And in West Africa, malnutrition has been attributed to a *poverty in knowledge* of the nutritional needs of a child rather than to economic poverty.<sup>2</sup>

Richard Manoff describes a situation in India which vividly illustrates the point:

*Moola Singh is a farmer in a little village in the Punjab about 200 miles from Delhi. Every morning he goes to work in his fields and takes with him the food he will need for the day. In the past, before the "Green Revolution" brought him his measure of modest prosperity, Moola would take with him his curd (or yogurt) and his chepati.*

*But now Moola is affluent and aspires to live and eat like some of the rich people he's seen in the cities. So instead of curd and chepati, Moola now takes tea and biscuits. His vanity is greatly pleased. But his health won't be. The new "improved" diet has less than half the nutritive value of the old. And when he begins to feel the difference, the chances are he will never understand why.*<sup>3</sup>

"Communication" implies *getting* as well as giving information. Many intervention programmes have failed to achieve hoped-for goals because the planners or professional staff did not know enough about the people with whom they were trying to work. In short, there was a one-way flow of information instead of two-way. Dr. Juan Flavier who worked in the Philippine Rural Reconstruction Movement tells how not knowing enough about people in the barrio impeded a literacy programme:

*When we went to the barrios and asked for the illiterates so they could be taught, the expected enthusiasm was completely absent. The farmers did not come forward. This was hard for me to comprehend; I thought that if they truly valued education then they would come forward with eagerness because education was being offered on a silver platter.*

*While the villagers of Pakistan did not seem to appreciate the value of education as greatly as did the Filipinos, when there was a call for literacy classes, the response was very good. Why was there not the same response in the Philippines? This phenomenon bothered us rather deeply at PRRM. For a number of years we went around the barrios, at a loss as to what was wrong. A few years ago, we stumbled on a possible reason. It was the meaning of the Tagalog word for*



*illiterate. In English illiteracy means the inability to read and write. We found that the Tagalog term is mangmang...While it means the inability to read and write, in addition it implies stupidity. In other words, when we asked who were the illiterates or mangmang in the barrios, we were in effect asking who were the "stupids"...*

*This shows how distasteful the word is; yet we had gone around the villages using it as though it meant nothing derogatory. Now, we know better. We do not use mangmang or stupid.<sup>4</sup>*

In an agricultural improvement programme in Mexico, members of the project staff were puzzled by why farmers did not adopt new practices for growing maize (corn). Three years after the programme began they discovered that practices already used by some of the farmers were better for the local conditions than the new ones proposed by the project. The staff had failed to get information from the area, before trying to impose a solution from the outside.

Each of these situations could have benefitted from an effort that did more than simply consider communication as a vehicle for delivering information to waiting audiences. It is a relatively new idea to involve communication professionals in development programmes. Yet, communication is as specialized and important an enterprise as the strictly medical and nutrition aspects of improving family and community welfare. Creative communication strategies are particularly important since innovative methods must be employed to reach large numbers of people with prevention-oriented programmes. The scale of the problem both in terms of numbers and in terms of physically reaching people is too great to depend on traditional person-to-person approaches that have characterized some intervention programmes.

THE GUATEMALAN SETTING

This case study begins with the observation that Guatemala, like many other developing nations, has large numbers of people who exist in poor health and nutrition. Statistics reveal that because of malnutrition and poor health, it is a privilege to reach adulthood in Guatemala. The circumstances tend to be worse in the rural areas than in the cities, and because of geographic and cultural isolation or semi-isolation, it is more difficult to change the situation in many of these rural areas. About 60% of Guatemala's population live in isolated communities of 2,000 or fewer people. Illiteracy and the multiplicity of dialects compound the problem. Comparable conditions exist in Asia, Africa, South America -- indeed, throughout the world.

A close examination of the conditions existing in Guatemala reveal that children and adolescents represent about 60% of the total deaths in the country.<sup>6</sup> The most vulnerable group seems to be the youngest children. In 1971, children between the ages of zero and four years accounted for almost 50% of the total deaths for the nation.<sup>7</sup>

Eight kinds of diseases are the main causes of about 90% of the deaths of children aged one to four.

Table 1: Causes of Death in Children 0-4 Years Old  
by Percent, in Relation to National Totals<sup>8</sup>

	<u>1971</u>
1. Diarrhoea.....	57%
2. Whooping cough.....	86
3. Measles.....	75
4. Helminthiasis (parasites).....	80
5. Anaemia and nutritional deficiencies.....	34
6. Influenza, pneumonia and bronchitis.....	60
7. Perinatal morbidity and mortality.....	100
8. Not well defined symptoms and diseases.....	43

*Nutrition and Children*

As in other developing countries, infectious diseases, neonatal mortality and malnutrition are intricately related -- so much so, that it is almost impossible to ascribe a death to only one of these causes. The nutritional state of Guatemalan children leaves much to be desired. In a recent article, Waterlow and Payne state that "an (energy) intake of about 320 KJ/kg.\*, which is quite common in children in developing countries, is just enough for maintenance with no margin for growth or extra activity."<sup>9</sup> And they cite as one of their examples the result of a Guatemalan study of children 0-2 years old. In 28 child-days, the children had an average daily intake of 1.16 grams of protein, and energy of 323KF.

According to a 1974 report by the Food and Agriculture Organization (FAO) and the Secretaria de Integración Centro-americana (FAO/SIECA), this small country of only five million inhabitants had 408,000 children with first degree malnutrition (75-90% of normal weight), 220,000 with second degree malnutrition (60-75% of normal weight), and 49,000 children with third degree malnutrition (less than 60% of normal weight).<sup>10</sup>

Even if children survive, they don't fare very well. The FAO/SIECA analysis says that anthropometric studies in Central America by the Nutrition Foundation and the Massachusetts Institute of Technology show that protein-calorie deficiencies cause a definite retardation in weight and size in children by the age of three months. When the child reaches two years, he is one year behind the normal weight and size. And by the time he is age five, this gap is almost two years. FAO/SIECA also says that in lower income groups (50% of the population) the whole family's nutrition

---

\*Authors' Note: KJ refers to an energy unit. One calorie is equivalent to 4.184 Joules. (KJ = KiloJoule, or 1,000 Joules.)

deficiency is translated into less resistance to infection, with direct repercussions in morbidity and mortality rates of pre-school children.<sup>11</sup>

The repercussions extend further. Instead of contributing to family and national economic welfare, illness and malnutrition constitute a drain on the country's resources.

### *Mothers and Newborn*

The statistical drama goes on to describe the women. Between 1970 and 1972, one out of each 10 women who died, died of child-birth related causes. In those three years, one of each 100 pregnant women died at childbirth.<sup>12</sup> Authorities generally agree that a great many of these deaths could be prevented by improving the nutrition of the mother and the skill and hygiene of the midwives.

But, what are the chances for the newborn? In 1970 and 1971 about 3% of the total births were still-births. Of the children born alive about 3% more died within 28 days. Of the total of children born alive in those years, slightly over 8% died before reaching one year old.<sup>13</sup>

This health and nutrition problem has been in evidence for many years. Dr. Carlos Pérez of the Institute of Nutrition for Central America and Panama (INCAP) described a similar situation of Guatemalan mothers and children in 1956, and gave a revealing picture of what happens. Dr. Perez said that when the child is between six and eight months old, the malnourished mother's milk starts to be insufficient for the child's need. The baby's growth and maturation begin to slow down. When the child is about a year old, tortillas, water from cooking beans, coffee and occasionally fruits and vegetables are given in addition to breast milk. The same diet continues through weaning (between one and three years old). At this stage growth and maturation practically stop.<sup>14</sup>

Dr. Peréz observed:

*In some cases, it is during the convalescence from an infectious disease, such as measles, that severe malnutrition appears. Due to fever and damage to the kidneys, said to be produced by meat, mild or heavy food during this delicate state, watery diets are imposed for several weeks.*<sup>15</sup>

Dr. Perez attributed the poor child feeding practices to erroneous beliefs, ignorance concerning the need for a good diet and about the way of preparing food and low family budgets. But he observed: "However, in most instances the mother with a limited budget would be able to feed her child in a satisfactory way if only she knew how."<sup>16</sup>

#### *The Role of Women*

In rural Guatemala as in the rest of the developing world, pregnant women, nursing mothers, infants and young children are nutritionally the most vulnerable groups. It is evident that in order to help any of these groups, the women will have to play a most important part. Experts concerned with the preschool child have found that "to affect the nutrition of the child, it is the family, and above all the mother, that must be reached."<sup>17</sup>

The importance of women's contribution to society and the urgency of reaching them with the necessary information is being recognized by the major development agencies. According to the World Bank:

*In the traditional, as well as in the modern sector, the key to becoming a part of the economic mainstream is education. If women are to make their greatest possible contribution to the national effort, access to quality education is essential. In 1970, 60% of the world's illiterates were women. Yet, children of both sexes receive their education from their mothers during their most crucial years of development. Thus, where women remain uneducated not only is their contribution to society limited, but the potential contribution of the next generation is also limited*

*by inadequate preschool education. Clearly, then, the education of women is crucial if the cycle of poverty is to be broken.*<sup>18</sup>

#### DEFINING THE PROBLEM AND THE MESSAGE

Developing a communication strategy to improve health and nutrition standards requires more information than we have discussed up to this point. We know the general conditions, but we need to know more about the specific population with whom we will be working.

In Guatemala health and nutrition and the education of women seemed to us to be important to improve the welfare of rural families. Health, nutrition, education, and agricultural production are so inextricably entwined that changes in one element inevitably have repercussions on others.

Anticipating the continued shortage of outreach personnel -- extension people, village level workers, paraprofessionals -- we have concentrated on trying to retain "localism" in communicating with rural people, while at the same time achieving more efficiency than can be attained on a one-to-one basis.

We limited our project to one finca. (We will use "finca", "farm" and "plantation" interchangeably in this unit.) To start out, we needed to discover the owner's *policy* concerning the health and nutrition of workers on his plantation. Some background on the finca may be helpful in picturing the situation.

Called Finca Maria de Lourdes, this coffee and rubber plantation has an area of 1,100 acres in the Department of Quezaltenango, Guatemala. It is situated at an altitude of 2,200 feet, and the annual rainfall of 197 inches comes mostly between mid-May and mid-October. The farm has 800 inhabitants, 275 of them employees. There are 216 families, 335 children and 240 women homemakers.

The plantation supplies housing, primary school, water, electricity (hydroelectric and diesel generators), corn mills, medical attention (a resident nurse/midwife, and a doctor who visits the farm and receives patients in his clinic in a nearby town), medicine, and hospitalization when needed. All of these are free of charge. Funeral expenses are also paid by the plantation. The plantation is included in the typhoid, polio, measles, diphtheria, tetanus, and whooping cough vaccination campaigns conducted every year by the Ministry of Public Health. If they need it, children are given parasite medicine every six months.

Plantations are required by law to provide other free services including first aid, primary school and housing. The housing provided by the Finca Maria de Lourdes consists of two rooms and a kitchen per family. The houses are made of cinder block and wood with zinc roofing. There is an average of three persons per room. The kitchen is in a separate room.

### *Learning about the Community*

Information from several sources was needed as a basis for designing a communication strategy. These included professional sources, people closely associated with the finca, and the women on the finca.

#### *(1) Professional sources*

These included material that has been written about the area, as well as experts familiar with conditions on this and similar fincas.

Information on the most widespread diseases, prevalent causes of death, nutritional status and education in Guatemala was gathered from the official statistics of the Guatemalan Government, FAO, SIECA, INCAP, and the nation's Ministry of Education. Various experts suggested content areas to cover. These experts were professionals from the Pan American Health Organization (PAHO), and nutrition experts at Cornell University.

(2) *Experts from the finca*

Several people closely associated with the finca and the plantation workers themselves provided a wide variety of information useful in developing the strategy. These included a physician who serves the finca, the nurse and school teacher who are in residence there, the mayor of the nearby town, and the finca owner family.

(3) *Women on the finca*

We asked the plantation owner's wife, Olga, to help us carry out a simple survey of a sample of the women homemakers on the finca. Olga was chosen because she regularly visits and talks with these women and they often discuss their personal lives with her. The women were not likely to resent her as an intruder since they often seek her out for help or advice.

Using a questionnaire\* we prepared in advance, she personally interviewed 40 of the 240 homemakers on the finca. The interview included questions on nutrition, health, child care and general information about the women that would help us understand more clearly what life was like for them and their families.

The nutrition questions consisted of a "dietary recall" of the previous day of the homemaker, her husband and her children. They also dealt with food preferences, shopping habits, Incaparina (a food supplement) consumption, home gardens, or plants, and whether the families raised animals for food or income.

Health questions referred to sicknesses in the family during the last two months, number of children, their ages, causes of death of those children no longer living, how sick are cared for (source of advice and medicine), parasite infection and vaccination of family members.

---

\*Appendix 1.



Questions on child care referred to hygiene, breast feeding and weaning practices.

The homemakers were also interviewed about their school education, regular information resources (e.g. radio), and whether they worked to supplement family income. And they were asked to summarize their activities of the previous day.

#### (4) *Personal observation*

Another important source of information was our own observation of life in the rural villages and on the finca. Indeed it was travelling in the rural areas -- by car, horseback and on foot -- that led us to an important part of the strategy.

### *PUTTING THE INFORMATION TOGETHER*

All of the sources we mentioned, including our own reconnaissance, provided information helpful in developing a communication strategy.

Following are some samples of the kind of material we collected:

#### *Publications*

Studies in Central and Latin America have revealed attitudinal tendencies in some Guatemalan rural communities which might be helpful in programme designing. For example:

*In Central and Latin America, food is valued as conducive to good health and strength, and there is a real desire to eat well if funds permit and to spend any extra money on food...*

*...In at least some parts of Central America there seems to be a useful empiricism in the mother's attitude as to what her child can and cannot eat. Each child is treated individually in this respect, and food is not withheld from one child because it appeared to disagree with another. The pregnant woman is encouraged to eat well and to drink strengthening gruels during lactation...<sup>19</sup>*

*Experts*

The Pan American Health Organization was a key contributor to our stock of information. PAHO advised that several specific health and nutrition related points be used in the project. These included:

- Corn and beans are a good diet for the whole family. Stress the need for eating enough beans.
- Promote breast feeding and the importance of good nutrition during that period.
- When children are one year old they should be eating the same foods as the rest of the family. Each time a child is introduced to a new food, start with a small amount, one teaspoon or less.
- Food should not be withdrawn from children when they get sick.
- Incaparina is as good as milk. It is especially good for mothers and children.
- Eat fresh vegetables and fruits from the area.
- Wash hands before touching food, both when preparing and eating it.
- Stress what a health clinic is, who works at the local health clinic, what can be expected from the clinic and what is its schedule.

*Survey of Plantation Women*

One of the valuable benefits of the information from the plantation women was the opportunity to develop some "profiles" of finca families, and especially the daily routine of the women.

With responses from 40 women we were able to get an overall picture of some other aspects of finca life. A few of the observations we made as a result of the interviews were these:

(1) *Food purchasing and preparation*

Food purchasing was done by women in more than half of the families interviewed; by men, in approximately 40% of the families. The *decision* of what food to buy was made by women in more than 80% of the families interviewed. In the remaining cases it was the husband who decided or it was a joint decision.

The women reported doing all the cooking except in three cases where it was a teenage daughter who did the cooking instead of the mother.

(2) *Meal pattern*

Approximately 42 different foods had been consumed by the families on the previous day. The variety of foods consumed that day varied among families, ranging from 5 to 14 different foods per family. All of the families interviewed had consumed coffee and *tortillas*. Almost all had eaten black beans, *chirmol* and *atol de masa* or corn. More than half had eaten eggs and greens. Slightly less than half had eaten rice and cheese. Other foods mentioned were liver, pork rind, sausage, ground meat, barbequed beef, chicken, stew, *enchiladas*, white beans and pork, red beans, *guisquil*, avocado, turnips, potatoes, fruit and fruit refreshments, lima beans, bananas, *flor de izote*, bread, spaghetti, noodles, macaroni, *tamalitos de chipilin*, chicken noodle soup, chocolate, oatmeal, Incaparina and milk.

(3) *Food preferences*

The food preferences of the same families showed meat to be the favourite food of more than a third of those interviewed. Beef and poultry were the meats mentioned most frequently by this group. Black beans and eggs were also mentioned as favourite foods by many family members. Other foods mentioned as favourites were bread, cheese, greens, fish, shrimp, candy, fruit and cocoa.

(4) *Incaparina consumption*

Incaparina is a food supplement designed to provide extra nourishment for low income families. Of the women interviewed more than half reported that the whole family drank Incaparina every day. In a few cases, all but the wife took it daily, and also in a few cases, it was given only to the children. A substantial proportion of the families never drank Incaparina at all.

(5) *Animals*

Of the 40 families interviewed more than a quarter of them owned animals intended for food or to be sold. Families owned four kinds of animals: chickens, pigs, ducks, turkeys. Each family had from none to three kinds of animals.

Of the 15 families who owned chickens, five families reported that their chickens had recently died because of a "plague". Newcastle disease had killed many of the chickens owned by the plantation workers.

(6) *Health information*

Women were asked about whom they consulted when taking care of the sick and where they got the medicine. The main sources were reported to be relatives. Very few consulted the farm nurse. Eight women mentioned waiting till persons got very ill before consulting with somebody they considered an authority on the subject.

Six of the women interviewed said their children had never had any vaccinations against infectious diseases, although the farm is covered by the Public Health yearly campaign.

(7) *Other information from the finca*

We can only give a sample of the information provided by the finca owners and others associated with the finca.

The owners reported that tetanus was one of the main causes of infant deaths. They said the farm provides the services of a trained nurse/midwife, but people prefer the traditional local midwives because of their rituals and alcoholic beverages. However, their delivering conditions are unsanitary. Women also seemed scared because the farm nurse wears rubber gloves when delivering a baby.

In reference to the children's diets, the owners reported that babies were often given coffee, fried food and oil -- which the people thought were very healthful for them. The owners said that women breast feed their children for a long time. They cannot afford milk formulas and these would not be very hygienic when preparing them. The owners thought mothers should be encouraged to drink Incaparina if they breast feed their children.

The doctor who visits the farm reported the most frequent diseases of the people to be gastroenterocolitis and diseases of the respiratory tract. He pointed out that due to lack of hygiene and shoes, parasite cases were frequent. He saw a need to educate the people about preventive health measures and to encourage them to follow the doctor's instructions. He pointed out scarce economic resources and the contamination of the environment as two of the main causes of health problems, but added that "unless you raise their level of education to at least primary school, any effort to improve their health is in vain".

The local doctor, the farm owners and farm nurse said very few workers follow the doctor's instructions and instead prefer the advice of witch doctors, pharmacists or unqualified midwives. Some people hide when the vaccination unit comes, and parasite medicine is misused because it is taken too often, not at all, or it may not be the appropriate medicine for the type of parasite. These conditions exist because people do not consult the doctor or nurse

before giving the medicine to children. Thus, it is often not lack of resource materials -- but lack of information and understanding that causes many problems.

### *Synthesis of Information*

Each of these sources added information that helped us understand the health, nutrition and cultural environment in which a communication programme could be developed. In addition, using multiple sources reinforced certain points. For example, experts spoke of the usual causes of death on the finca; and this information was personified in the responses of the finca women themselves who spoke of their own families.

### *Organizing the Content*

A strategy requires an explicit identification of goals. These goals are more likely to be realistic ones if they are selected as a result of the information gathering we have described.

Our goals included teaching finca women some fundamentals about nutrition, hygiene and medical care, and persuading them to act according to that information.

In order to present the information in a systematic way -- and to be sure we did not leave out points that we might have taken for granted -- we organized the information item by item. (This would also help us later on when we would want to evaluate what we had done.) In Appendix II we have included the outline used in organizing the information to be conveyed.

As the strategy developed more points were added to the outline. For example, we discovered that we could arrange to have chickens inoculated on the finca. Therefore, it seemed appropriate to provide information on raising poultry. Thus this and two other action-oriented topics were added to the content outline

to test the effectiveness of our strategy in promoting specific actions. The coding of individual points\* was important later in planning specific messages.

### *SELECTING THE MEDIA*

At this point we should review some of the elements which go into a communication strategy. First, there must be explicit goals. These may be derived from such sources as an organization's policy or a nation's long range development programme, e.g. a five-year plan. Often the goals will imply who the target audience or participants in project are -- but not always. So this must be clearly specified. The specific reason for trying to reach each audience must also be made explicit. For example, a husband might be the direct target of a communication, but the *message* might be intended for his wife. He may be important as a link to her, especially if cultural patterns prevent direct contact with women (especially by men).

Another important strategy element is the selection of media, which is the main topic of this chapter. In addition, there are the determination of the schedule for carrying out the communication programme, and the arrangements for doing an evaluation.

### *Criteria for Media Selection*

The variety of media available for a health/nutrition project varies widely from place to place. The "choice" may range from the interpersonal contact of a village level worker to mass communication via television and satellites. The actual choice, however, is usually much more limited. The medium may be determined by the biases of a funding agency, by the amount of money available, by

---

\*Appendix III

the nature of the content, by the literacy of the people to be reached, by the creative talent and media available, or by what has traditionally been done in the past.

We mentioned earlier that our own observations were important in developing the communication strategy for the finca project. What we observed was the prominence of pilas in the daily lives of rural women and their possible role in communicating with women.

### *The Pila as a Communication Setting*

The pila is an outdoor public laundering center where women often spend from 15 minutes to several hours daily washing clothes, drawing water and sometimes -- though it is frowned on -- washing children and dishes. Pilas are found in communities all over the country from such large cities as Guatemala City and Quetzaltenango to small aldeas (villages) and fincas.

The pila is a place where women not only wash, but where they also talk. It is already a kind of informal communication center. Yet, it was clear that many women visiting the pilas spent much time listening to little more than the rhythmic scrubbing of clothes.

Rarely, if ever, was a radio to be found there.

It seemed reasonable to start with the pila as a setting for providing health and nutrition information to women.

The method for providing information at the pila had to have several characteristics if it was going to fit in with the women's regular activities. It had to be largely an oral medium, for two reasons. First, few of the women could read; and second, an oral communication would allow them to continue their work while they listened. It had to be flexible enough to match the pila-visiting schedule of a substantial proportion of the women -- a schedule that may shift because of harvests, rains, and other localized



conditions. It also had to be flexible enough to present information to women who are at the pila five minutes (for water) as well as those who are there for two hours.

It had to be a system which could be used consistently, day-in and day-out, to achieve impact through repetition and reinforcement.

It also had to be a simple system which would not require the presence of professional people, because, as in many parts of the world, it was an area seldom touched by extension agents or paraprofessional aides. Guatemala has fewer than 10 nutrition professionals to carry out field work for the whole country.

### *The Media Strategy*

Audio cassette technology (ACT) seemed to be a likely possibility for providing information at the pila. The equipment is low-cost, sturdy and simple to operate. It provides an opportunity to create important, interesting and entertaining messages that women can listen to while they work. Recording them on cassette tapes, these messages can be easily repeated without the *sender* getting bored or fatigued and without compromising the quality or integrity of the message.

While suitable for other circumstances, radio, television, films, interpersonal contact, and printed materials seemed less suitable for communicating with the plantation women. For example, in examining the women's daily routine, we found that their visits to the pila provided one of the few opportunities during the day when they could be conveniently reached. We needed a system that could reach them there. Audio cassette players provided greater flexibility than radio, which seemed to be the only feasible alternative.

*System Design*

There are three pilas on Finca Maria de Lourdes. All are located along the dirt road that passes through the plantation. Housing for the families who live on the finca year-round is also clustered in the same area.

In the basic system, cassette recorder units operating on battery power were played in all three pilas simultaneously, twice each day. A small inexpensive (US\$7.00) auxiliary speaker was used at each pila to augment the sound volume and quality, although we discovered later that these were not needed.

Flora, a teenage girl selected from a plantation family, was hired to bring the equipment to the pilas each day and start the machines playing. She would replay the day's programme four or five times during the prescribed time periods. This kind of repetition would not have been feasible with radio.

A different programme tape was prepared for each day of the week during a three-week period. Each tape had the same 30-minute programme on both sides so that Flora had only to turn the completed side over -- rather than rewind it -- to start it going again. Then she could go on to do the same at the other pilas. In a short while, she would return to the first pila to turn the tape over, and start the cycle again.

*Content*

Designing the content for the cassettes was an important part of implementing the media strategy. Among the elements which went into the programmes were:

*(1) Dramatization*

Knowing the popularity of the novela radio format, we created a fictitious family living on the finca. Through the conversations and activities of the Alvarez family and their friends, we identified health/nutrition problems that people in the finca face and

discussed some ways that these could be attacked. To be consistent in characterization and behaviour, we developed for our own guidance personal histories and personalities of the key people in the scripts. We expected that the novela would make tapes interesting and would help listeners identify with the family and its problems -- providing some "safety credibility."<sup>20</sup>

(2) *Authority*

To add "competence credibility" to the dramatization, a strong, clear authoritative sounding voice was used to summarize the major points covered in the dramatization. There was no attempt to convey the impression that this person was a medical or nutrition expert. He was simply the announcer or "locutor".

(3) *Reinforcement*

In addition to summaries provided by the locutor related specifically to the novelas, we placed short announcements or reminders (similar to public service announcements or, in Spanish, "cuñas") in several parts of the tape. Additional reinforcement was provided by including occasional interviews with medical or other specialists often known to the people on the finca (e.g. the finca nurse and the doctor in the nearby aldea).

(4) *Localization*

Interviews, not necessarily related to health and nutrition, were included to heighten interest in the "programmes" and to give listeners a feeling that the content was relevant to them and to their community. For example, interviews were conducted with the finca owner who related some of the history of the finca, with a young girl telling how her family's chickens had survived the "plague" because of vaccinations, and with a plantation worker who gave accounts of life on the finca long ago and the changes that had taken place.

#### (5) *Entertainment*

To provide variety, music was placed in several parts of the tapes. The type of music we selected was determined in an informal survey on the finca. Having music after information-giving sections also provided the women an opportunity to talk together about what they had heard, or simply to think about what was said.

Dramatized stories of a fantasy nature provided another entertainment element. These were original stories similar to "fairytales" but they were created for this particular geographic and cultural area.

#### (6) *Questions*

Occasionally, as a summary/review process, the locutor asked questions based on information given in an earlier part of the tape. After a short passage of music, during which the listener could try to answer the question, the locutor gave the answers. This technique was designed to stimulate the women to become involved as participants rather than always being listeners.

#### (7) *Brevity*

Because women sometimes visited the pila for very short periods of time, we planned each section of the 30-minute programme to be eight minutes or less. That duration was selected quite arbitrarily. This permitted someone who was there only to draw water to hear enough to get a meaningful message.

#### (8) *Semi-sequential flow*

Although each programme had an underlying pattern of development throughout its 30 minutes, we organized the content so that people could arrive at the pila at almost any part of the programme and pick up the message. Thus, a person could arrive after the first ten minutes without being disoriented. Likewise, a person could leave part way through, and in most cases, have been exposed to a complete message.

(9) *Information-motivation-behaviour*

The same pattern was followed in going from programme to programme: the story line in the novela continued from day to day, but a listener missing a day would not lose the thread of the messages. However, some special sequential patterns were developed. For example, in early programmes we stressed providing *information* on what vaccinations are. In later programmes we stressed *motivation* to get vaccinations. And in still later programmes we emphasized what the families could do (*behaviour*) to have vaccinations. Those who missed earlier programmes still were exposed to this pattern, because of the last item in the content strategy: repetition.

(10) *Repetition*

Later programmes in the series often included cuñas and novela incidents that reiterated points made in earlier programmes. For example, information about vaccinations appeared at the stage where we were stressing what families could do about getting vaccinations.

*The Basic Format*

Following is the typical 30-minute programme format:

THEME:	CHEERFUL, ANIMATED RANCHERO MUSIC
ANNCR:	INTRODUCTION AND HIGHLIGHTS
MUSIC:	
NOVELA:	INTRODUCTION, EPISODE, SUMMARY
MUSIC:	
CUÑA:	RELATED TO EMPHASIS OF THE DAY
FEATURE:	STORY (READ OR DRAMATIZED), OR INTERVIEW OR OTHER LOCALIZED ENTERTAINMENT FEATURE
MESSAGE:	TALK BY EXPERT, MONOLOGUE BY NOVELA CHARACTER, OR ITEM PRESENTED BY ANNOUNCER
MUSIC:	
ANNCR:	CUÑA OR QUIZ
MUSIC:	MARIMBA TO CONCLUSION

*IMPLEMENTING THE STRATEGY*

Up to this point, most of the strategy for reaching women at the pila has been defined. The next step is creating the content or "software" for the project.

Each programme followed the same general outline (Appendix II). The principal points which were to be covered in each segment of each programme have been plotted on the chart (Appendix III). In the Guatemalan project, there were to be a total of 15 programmes, i.e. five programmes per week for three weeks.

Most of the content was written by Susana Fernández de Colle. She created the story line for the Alvarez family and wove into each episode the assigned points. She also wrote the messages, and the cuñas (spot announcements) and planned the interviews. Since she had spent many of her early years on the finca and in the rural highlands of Guatemala, she was able to write in the language and style of the women on the finca. And because the system was tailored for a relatively small area, she was able to include in the scripts (especially the Alvarez novelas), names of people, places and events which were familiar to the women who washed at the pila.

We used a simple cassette tape recorder to do the interviews on the farm and in the nearby town which were included in the final programmes.

The wife of the finca owner agreed to write stories which the women (and their children) would enjoy. Although it was not necessary, we decided to change the stories from a narrative text into a dramatic format.

Music came from two sources. We used selections from phonograph records, and we also recorded a local finca musical group.

*Production*

The recordings not made in the field were done in Guatemala City using the modest studio and production equipment of another rural education project, Educación Básica Rural. Most of the performers were non-professional people who, though not plantation workers themselves, were familiar enough with life on fincas to be able to speak appropriately for their parts.

The actual recording, editing, assembling and duplicating of programme tapes we did ourselves using simple inexpensive (not broadcast studio) facilities. We point this out to stress that audio projects such as this do not require sophisticated equipment and professional broadcast talent to accomplish the task successfully.

*The Pila Cassette System*

At the finca, Flora learned in less than five minutes how to operate the machines and change the batteries. She picked up the equipment, tapes and notebook from a convenient place each morning. She played the tapes at the pila, and at the end of the listening period, she returned the materials to the overnight storage place. We were able to trust Flora with that entire operation, and paid her a small fee for this service during the three week period.

The flexibility of the cassette system made it possible to adjust the original schedule (7 to 10 a.m.) to the new pila hours of the women when -- unexpectedly -- they started harvesting coffee early in the season. The 1975 coffee crop came usually early in the year, and the women who usually pick coffee would come to the pila much earlier in the morning and later in the afternoon. Thus the pila communication schedule was changed to two hours in the morning (6:30 - 8:30) and two hours in the afternoon. The decision on the exact timing of the afternoon programmes was left to the

girl who would turn the recorders on when the women were already back from the fields. The women's return depended on the weather: whether it rained that afternoon and at what time.

### *The Take-Home Cassette System*

To supplement the regular pila communication system, we introduced another way that women could listen to helpful information. In previous uses of audio cassette tape recordings, we had experimented with providing low income persons with cassette recorders and tapes which they could take and listen to in their homes. This system has some interesting advantages. For example, it may be easier to introduce health and nutrition changes when more members of the family are exposed to the content, as they would be when a tape is played in the home. A "take-home" system also allows family members to listen when they want, and because it is easy to replay tapes, they can listen as many times as they want. This system also offers the possibility that non-family members (i.e. friends and neighbours) might listen in the borrower's home, thus extending the impact to persons who might otherwise not be exposed to the messages. We have a hunch that this "spill-over" audience can grow to a significant size.

The message on the take-home system was related to tapes the women heard at the pila.

One of the principal messages dealt with the raising, care and food value of chickens. Earlier, we had discovered that some people on the finca raised chickens for meat and eggs, but this was not widespread primarily because many chickens had been lost to the "plague" (Newcastle disease). But in one of the pila tapes we pointed out in various ways that it was possible to have healthy chicks, and we encouraged the listeners to borrow a cassette machine from the finca office and listen to a special tape about



chickens. On that special tape we offered a baby chick to anyone who could repeat on a particular later date a sentence about vaccinations.

With this "subsystem", we hoped to find out more about linking a public (pila) cassette system to a special interest take-home cassette system. Obviously, we were also concerned with what behaviour would follow this sequence of listening.

### EVALUATION

A final field operation we should mention is evaluation. This word sometimes unnecessarily intimidates people because it often brings to mind complex collection of data and even more complex formulas and statistical tests for interpreting the data. It need not be so fearful. Evaluations should be carried out in order to gain help in making programme and policy decisions. Brajesh Bhatia made the point effectively:

*The purpose of evaluation is to measure the effects of a programme against its stated goals as a means of contributing to subsequent decision-making about the programme and of improving future programming...*

*...An evaluation study does not generally come up with final and unequivocal findings about the worth of a programme...*

*...What evaluation can do is provide data that will reduce uncertainties and clarify the gains and losses that may result in different decisions.<sup>21</sup>*

We designed a simple questionnaire that was intended to find out whether the strategy we employed was successful in conveying information to finca women, and whether they acted on the basis of that information. We were also interested in their reactions to the system we used for providing that information.

The questions are listed in Appendix IV.

A sample of 40 women from Finca Maria de Lourdes was chosen to be interviewed for the evaluation. An additional 10 women on a neighbouring finca where there was no pila communication project were interviewed for comparison. We called this our control group.

## *RESULTS*

Not all results can be easily captured in statistical analyses. In reporting on the results of this case study, we have mingled both the quantitative and qualitative in an effort to impart both the intellectual dimension and the unquantifiable "feel" of the project.

### *Audience Size*

It was not possible to measure the exact number of people reached by the tapes, but one can get an approximate idea from the records of the girl operating the cassettes and from the post experiment survey results.

Flora, the girl in charge of setting up and turning over the tapes, wrote down how many people were at the pila every half hour. According to her records, the average number of people per day was more than 200: 122 women and 82 men and children.\*

### *Information Gain*

To see if the system was effective in conveying information, we asked ten questions which dealt with topics covered on the tapes (Appendix IV). We compared different categories of listeners and found the following:

---

\*Authors' Note: These are not necessarily all different people because some counted during one period (half hour) might still be there during another period. These figures did not include those who heard parts of a tape when Flora was not there, or those who were within hearing range but not right at the pila.

	Average Score (maximum = 10)
Finca Maria de Lourdes	
Daily listeners (10)	9.2
Occasional listeners (26)	7.6
Never (4)	3.5
Control group (10)	2.7

Clearly, those women who were exposed at least occasionally to the pila tapes were able to correctly answer questions based on health and nutrition information presented on the tapes better than non-listeners. The answers cannot be assumed to be part of the normal cultural store-house of knowledge since those who did not hear the tapes scored significantly lower.

Obviously this is immediate recall and we cannot make any judgements in this report concerning longer range retentions, although an effort will be made to follow up these same interviews later.

#### *Reactions to the Tapes*

We got reactions to the system and the contents both through the post survey and through comments volunteered to us and to "informants".

In the survey we asked people if they liked the system. Of the 40 respondents, 36 said they liked it. The remainder had not heard it so they gave no answer to this question.

The same pattern of responses were given for questions on:

- could the tapes be heard
- were they clear
- were they truthful
- were they helpful

Perhaps more revealing were the comments volunteered by women at the pila. For example, as one approached the pila, you could hear some women humming to the cassette music as they washed their clothes. "The pila is now a happy place", we heard, as well as "We should have them all the time". One woman indicated that the tapes were "fun", and said that "they make you wake up to some things". Women repeatedly said that they liked the advice on the pila tapes because "one remembered a lot -- one starts to remember because of hearing it every day". One commented that "the tapes not only told you Incaparina is nutritious, but they explained for whom it is good and why." Others remarked how dull the pila was going to be when there were no more tapes. One woman asked how much it would cost to buy a machine.

When a visitor from PAHO asked a pregnant woman at the pila if she liked the programmes, she indicated that she did. "What do you like best?" the woman was asked. She reported that she liked the information on delivering babies and hygiene. Who would deliver her baby? The nurse, she said, because she was cleaner and she wore gloves. (The nurse's rubber gloves earlier had been a reason why women went to another, less hygienic, midwife. After the tapes, women began to verbalize the *benefits* of the gloves rather than their objections to them.)

As one of us was heading toward the pila one day, a woman stopped him to suggest that the tapes be played in the afternoon also, so that children could listen to them. On at least one occasion, Flora was asked by women at the pila to leave the tape on an extra time while she went to pick up the equipment at the other pilas.

(Data, unfortunately, will never reveal the signs of pleasure, absorption and satisfaction that could be seen on the faces of women at the pila when the tapes were playing.)

*Favourite Content*

What did the listeners like best on the tapes?

	Times mentioned*	
	First	Second
Advice	21	5
Stories	6	2
Novela	5	8
Music	5	7
Interviews	2	3

"Advice" was not a clearly discrete part of the tapes, but was woven throughout, in the novelas, the interviews, the cuñas, and the novela summaries.

*Strength of Local Material*

Manuel Majia, one of the first workers hired when the Finca Maria de Lourdes was started, was interviewed on the history of the farm. This interview was used in the tapes. When his wife heard the interview at the pila she ran to the fields to tell Manuel that she heard him at the pila. When interviewed during the survey, Manuel's wife insisted that the best parts of the tapes were the interviews with local people.

*Behaviour*

In a project of such short duration and where the evaluation is carried out immediately at the end, we cannot indicate the extent to which behaviour may later be influenced by the pila communications system. For example, most women cannot act right

---

\*Authors' Note: In a few cases, we gave "first" to two or three items in one person's response because she may have said she really liked all these things. While this may be methodologically impure, we feel that it does not do violence to the data, and that it does reflect accurately the woman's feelings.

away on the suggestion to use the "clean" midwife for delivery of a baby. However, built into the study were some simple recommendations that could be acted upon immediately.

The first was a recommendation to try a special Incaparina recipe. The tapes provided information on the value of the Incaparina for the whole family, and in various ways provided the recipe. The results:

70% (28/40) memorized the recipe. (Rural women in Guatemala, as in many other countries, do not write down recipes since they often cannot read or write.)

58% (23/40) had tried the recipe by the time the post survey was conducted.

We want to stress that the taped information did not introduce the women to Incaparina. To the contrary, 58% (23) of the sample had tried it before. But more than half (13/23) had not tried it *as recommended*. In fact one person did not know how long to cook Incaparina -- not an astonishing fact since packages of Incaparina have the directions *printed* on the package and most of the women are not literate.

One of those who had never tried Incaparina was Maria. Maria is 12 years old. Because her mother is dead, she takes care of the house for her father and younger sister. She liked to listen to the tapes when she went to wash at the pila, and since she heard that Incaparina is good and learned from the pila tapes how to prepare it, she began providing it for her family. They had just finished their first pound the day before our interviewing started.

Another behaviour item in the project dealt with borrowing a cassette player for special information on raising chickens. The special tape promised a baby chick to the first 100 persons who would go to the finca office (cum medical clinic) and repeat a

phrase that was given on the tape. The phrase, loosely translated, was: "In seven days I will bring the chick back for an inoculation." A special day, a Saturday afternoon, was set for giving out the free chicks. This was the subsystem (see page 177).

Following is information on listening to the special tape:

28% (11/40) *heard* the special tape\*.

10% (4/40) families (husband or wife) *borrowed* a machine to listen.

18% (7/40) heard a tape borrowed by a friend or neighbour.

Several women mentioned a situation we had encountered occasionally in earlier projects: sometimes people were reluctant to borrow a tape and the recorder because of possibly damaging them. One said she heard about them at the pila but was afraid to borrow one and have it run out of order. Another said that she had small children and was afraid if she went out to wash, they would touch it. A third woman echoed the feelings of the second.

A record was kept at the farm office of who borrowed the recorders. It was reported there that only four men and five women had borrowed the machines. During the post survey it was learned from some office workers' wives that their husbands had brought home machines, but the names of the office workers did not appear on the records. Other people on the farm also reported that a cassette recorder was constantly being played at the office and

---

\*Authors' Note: The reader should remember that we interviewed only a sample of finca women for the evaluation, thus the quantity given in this and other data does not represent the absolute totals of people who heard tapes, etc. Multiplying these numbers by six would give approximate totals for the whole finca.

that men would stop to listen to that machine on their way back from working in the fields. Many of the women interviewed added that "people talked a lot about those recorders".

One woman said she knew she could borrow a recorder, but she worked and didn't have time to go to the office to get one. Another reason for the women's hesitation was that many of their husbands don't allow them to go to the office "because there are too many (men) working there".

When the assigned time came, a crowd of people (men, women and children) were gathered to get the chicks. In less than an hour, we "processed" 100 persons who repeated the phrase, saw the chick get its first inoculation and then took their chick home. Although some families got more than one chick, we tried as judiciously as possible to limit the number that went to any one family. Unfortunately, some people got home from the fields late that afternoon and arrived after the chicks were gone.

Obviously, though a rather small number of people actually borrowed the take-home tapes, the word about the chicks spread by mouth or by neighbours listening to neighbours' machines.

#### *Responses to the Inoculation Message*

Three interesting things happened after the chick give-away. The first, anecdotal in nature, was the phrase used around the finca to describe the new chicks. They were called "the chickens that don't die". Apparently the message from the tape linking protection from the plague to the inoculations was remembered and expressed in this fashion.

The second event was totally unexpected. We had started our post project interviewing the day before we were to give the new chicks that seven-day inoculation. At the first home, a woman asked us if we could provide inoculations for *other* baby chicks on the finca. We agreed (as the finca owner himself would have, had



they asked him), and we set a time for that very afternoon. The woman promised to tell others. Later, even before we set up our "inoculation stand" in front of her home, people were waiting with under-ten-days-old chicks. We inoculated more than 80 chicks.

On the day we set for inoculating the 100 give-away chicks, 79 were returned. Many of the chicks had distinguishing marks painted on their wings or bodies to indicate whose they were, and that they were the "special" chicks.

#### *Use of Cassette Equipment*

We discovered that the audio cassette system is relatively trouble free. There were no breakdowns of machines and when batteries ran down before their "scheduled" expiration, they were easily replaced.

Although we relied heavily on C-type batteries available in the local market, we experimented with a small single 6 volt rechargeable battery. This proved rather successful and, in a longer term project, probably would be more economical than the C-type batteries. Electricity from mains power is another alternative, depending on local conditions.

Although many administrators have wondered how well people in rural areas would care for the machines, our experience with rural families indicates that in many ways they handle equipment more responsibly than do the more urban employees of ministries and other government and private organizations. Rural people we've worked with seem to appreciate more the value of the hardware, probably because they have so little.

The women at the pila were protective of the cassette machines. One day as we were walking away, a child started pulling a wire that hung between a cassette player and an external speaker. Without hesitation or inhibition, a woman gathered up the wire and wound it around a high nail so that the machine would not be damaged.

*BLUEPRINTS FOR ACTION*

Policies, goals, media, audience, "reasons", content organization, and evaluation are all important elements in the development of communication strategies for health and nutrition information.

We would like to stress several points we have made earlier in the case study.

(1) *Communication is a two-way flow*

It is important to obtain as well as to give information in order to carry out effective programmes. Ann Burgess suggests why:

*A wide gulf -- economic, educational, frequently cultural -- separates the educated health workers from the illiterate peasants whose nutrition they wish to improve. No longer do the educators instinctively know what will be accepted without question, nor how their fellow countrymen think about health and the prevention of ill-health.<sup>22</sup>*

(2) *Sophistication and complexity do not guarantee results*

Sometimes simple techniques -- although less dramatic -- may be more effective. Because they may be inexpensive does not mean they are ineffective.

(3) *There is much talent among the rural people you may be trying to serve*

Acknowledge it and take advantage of it, for those people may be the key to extending the reach of your programme.

(4) *Communication is a critical element in prevention programmes*

In allocating resources, the communication specialist or the communication function must have a principal share -- not simply what is left over.

*Some Final Observations*

The results of this project indicate that this is potentially a feasible and powerful means for bringing health and nutrition information to families and groups which are economically,

geographically or culturally isolated. Although the pila was the communication setting in Guatemala, other settings might be appropriate for the same technology and message system in another country. (Even in Guatemala, another possible setting for the cassette machine is the omnipresent "pulquería", a tiny refreshment store found in the smallest aldeas which sells such items as beverages, batteries, alka-selzer, soap, etc.).

Using audio cassette technology in rural development is a creative process, not simply a mechanical application of hardware. There is strategy and creativity not only in the development of messages, but also in the techniques used to "deliver" the message. For example, in this project, we operated the cassettes for a period of three weeks. This was dictated, at least in part, by our own time availability in Guatemala and the funds we had to work with. However, our judgement is that the system generally should be intermittent, rather than continuous. We think it should be used for 3-6 weeks and then stopped for four weeks or more. For most villages and plantations, a cassette system (the public type such as the pila, or a take-home type such as the subsystem) would be a novelty. An intermittent schedule would help preserve some of the novelty. An intermittent schedule would also permit equipment to be shifted from one location to another to get more widespread use of it.

Could the pila system be implemented on a regular and more widely spread basis to get some economy of scale in the production -- yet preserve the local character and flexibility of the system? We firmly believe that it can. Along with our claim that this is a "creative" system, we also contend that it can be carried out by non-professionals. Equipment is available which can be easily operated by any normal person. With a modest amount of briefing and some simple workshop activity, persons with the competence to hold office or be active members in clubs or community organizations can become builders and participants in such a system.

## FOOTNOTES

1. *Health. Sector Policy Paper.* Washington, D.C., World Bank, 1975, p. 23.
2. Berg, A. *The nutrition factor.* Washington, D.C. The Brookings Institution, 1973, pp. 74-75.
3. Manoff, R.K. *A mass communications campaign on nutrition education for the Government of India.* New Delhi, 1970 (USAID Consultancy Report).
4. Flavier, J. *Doctor to the barrio.* Quezon City, The Philippines, New Day Publishers, 1970, pp. 171-72.
5. Berg, A. pp. 74-88.
6. *Anuario Estadístico.* Dirección General de Estadística, Guatemala, 1972.
7. *Anuario.*
8. *Anuario.*
9. Waterlow, J.C. and Payne, P.R. "The protein gap". *Nature.* 13 November 1975, p. 115.
10. FAO/SIECA. *Perspectivas para el desarrollo y la integración de la agricultura en Centro America.* Guatemala, 1974, pp. 10-12.
11. FAO/SIECA. *Perspectivas.*
12. *Anuario.*
13. *Anuario.*
14. Pérez, C. "Progress in understanding and preventing protein malnutrition in Central America". *Federation Proceedings of the Amer. Soc. for Exper. Biol.* Vol. 18, 1959, p. 89.
15. Pérez, C. pp. 90-91.
16. Pérez, C. p. 90.
17. Autret, M. *Nutrition of the pre-school child: a consideration of new approaches.* Rome, FAO, 1964.
18. *Integrating women into development.* Washington, D.C. World Bank, 1975, p. 18.

19. Burgess, A. "Nutrition education in public health programmes -- what have we learned?" *Amer. J. Pub. Hlth.* 5(11), 1961.
20. "Safety credibility" and "competence credibility" are terms generally associated with the work of Everett Rogers (*Modernization among peasants*, Holt, Rinehart, Winston, 1969; *Communication of innovations*. The Free Press. 1971). Safety credibility comes from knowing people "just like me" are trying something new, competence credibility comes from knowing that a person "with more expertise than one" is recommending something new.
21. Bhatia, B. "Evaluation of mass communications". *Instr. Tech. Rep.* January 1976, No. 13, pp. 4-5.
22. Burgess, A. "Nutrition education in public health programmes".

*Editor's Note: An account of this experiment entitled "Communication at the Pila" by Susana Fernández and Royal D. Colle has been published. Write: Ann Leonard, CYCLE, P.O. Box 3923, Grand Central Station, New York, New York, 10017, U. S. A.*

## APPENDIX I

## Survey of Farm Women (English translation)

## NUTRITION

1. What did you eat yesterday (in the morning, noon, afternoon)?
2. What did your children eat yesterday (in the morning, noon, afternoon)?
3. What did your husband eat yesterday (in the morning, noon, afternoon)?
4. What is your favourite food (your husband's, your children's)?
5. Where do you get your food (farm store, store in town)? If somewhere else, where?
6. Who does the cooking in your home?
7. Who gets or buys the food for the house?
8. Who decides what food is to be bought?
9. What foods are good for children?
10. Do they drink Incaparina in your family? If yes, who and how much?
11. Do you own animals? Which? To eat, to sell? Who takes care of them?
12. Do you have anything planted around your house...for decoration (what), for food (what), to sell (what)? Who takes care of these plants?

1. Do you have a baby? Age?
2. Where does the baby sleep?
3. Where does the baby spend the day?
4. What does he like to play with?
5. Has he had diaper rash? How do you cure it?
6. How do you clean your baby?
7. Does anybody help you to take care of the baby?
8. A baby should be breast fed up to what age?
9. Up to what age did you breast feed your children?
10. What was the first thing you gave your children to drink (besides breast milk)? At what age?
11. What was the first thing you fed your children? At what age?

## HEALTH

1. Has anybody in your family been sick in the last two months? If yes, who and with what?
2. How many children have you had? How many are alive? Age of children? Cause of death?
3. Who advises you on how to take care of the children or other sick relatives?
4. Where do you get the medicine?
5. Has anybody in your family had worms? Explain.
6. Has anybody in your family been vaccinated? Who? Approximate date? For what?

## GENERAL

1. Did you go to school? If yes, up to what grade? What was the most useful thing you learned at school?
2. Do you work to earn money? (Wash clothes? Harvest? Iron? Other jobs?)
3. Summary of yesterday's activities. (Begin by asking at what time she got up? What was the first thing she did? Then...)
4. If surveyed on Monday, repeat question 3, asking about the day before yesterday.
5. Do you get any advice on the radio (or otherwise) that would help you in solving your problems?

## APPENDIX II

## Outline of Nutrition and Health Contents

1. *Breast feeding and weaning*

- 1.1 Breast feeding is good for children.
- 1.2 A nursing mother should eat beans, rice, greens and *tortillas* every day while lactating.
- 1.3 When pregnant or lactating, a mother should take Incaparina every day to be strong, and to make her child healthy.
- 1.4 Breast milk is better for children than any milk one can buy.
- 1.5 Some companies that are trying to make money are encouraging mothers not to breast feed their children, so that they can sell milk to them. One should not pay attention to them.
- 1.6 Breast milk protects children from constipation, diarrhoea and infection.
- 1.7 Breast milk is cleaner than other milk and won't make the child get sick.
- 1.8 Mothers should not give their children cornstarch *atol*, *yuquilla atol* or coffee, because these drinks aren't as good as milk. These drinks do not help the child grow, and they cause the child not to be hungry when it is time to give him good food.
- 1.9 If weather is hot and the child has fever or diarrhoea, mothers should breast feed the child and give him boiled water with a clean spoon.
- 1.10 Mothers should not use bottles. It is easier to keep a spoon clean, than the bottle. A bottle that is not clean can give a child diarrhoea.
- 1.11 There is no advantage in introducing foods other than breast milk in the first six months of life.\*
- 1.12 When a child is six months old, breast milk alone will probably not be enough for him. One should start feeding him some regular food a little bit at a time, one teaspoon or less the first day.\*
- 1.13 The first foods one can give to children could be mashed bananas, Incaparina, cereal, egg yolk, meat broth, bean soup with rice.
- 1.14 Sometimes it takes a lot of patience to teach a child how to eat.
- 1.15 When the child is one year old he should be eating regular foods. Every time one gives the child a new food, one starts with a small amount, one teaspoon or less the first day.

---

\*Editor's Note: In the member countries of CFNI we usually recommend introducing foods other than breast milk when the baby is around four months. However, in parts of the world where hygiene is very poor it is safer to wait until the baby is six months or so. A balance has to be drawn between the nutritional benefits of this added food and the risks of introducing infections. Until the baby is about six months it is better to feed the mother than to give extra food direct to the baby.

## APPENDIX II (cont'd)

### 2. *Good foods for the family*

- 2.1 Beans and rice are good for a person, especially if they are eaten together in the same meal.
- 2.2 Incaparina is as good as milk. It is good for fathers, mothers and children.
- 2.3 Eat fresh fruit and vegetables grown in the area. Identify them.
- 2.4 It is easy to collect wild greens in this area.
- 2.5 Greens are very healthy foods and have good taste. It is important that the whole family eat greens every day. Identify some.
- 2.6 Shoots, edible flowers and fruit also grow wild or can easily be planted around your house. Identify the ones you have seen around the rancheria (village). Could you plant some of them around your house?

### 3. *Health services*

- 3.1 The farm clinic is a place where one can go when anybody in the family is sick. It is not good to wait till the person is very sick to ask for help from the clinic, because then it is harder to cure the person.
- 3.2 The farm clinic is in the farm office building.
- 3.3 There, one can get good advice and medicine free.
- 3.4 The nurse who works at the clinic has been trained to help people get well. That is her job and she knows what she is doing.
- 3.5 The nurse is at the clinic from 7 a.m. on.
- 3.6 If the nurse is told when a patient is sick, she can give the person a letter so that he can see the doctor, or if necessary the doctor will come to visit the patient at the farm.
- 3.7 It is dangerous to buy medicine that the doctor hasn't prescribed. Therefore, do not buy medicine prescribed by the pharmacist. Take the medicine prescribed by the nurse or doctor so as to get well.
- 3.8 If medicine is prescribed by the farm nurse or doctor the farm will pay for it; the person will get it free.
- 3.9 Newborn babies die of tetanus when they are delivered by midwives who are not clean.
- 3.10 The farm nurse knows how to deliver children with very clean methods. Gloves are used because of hygiene. The nurse can prevent babies from getting tetanus if she delivers the babies.
- 3.11 To prevent diaper rash one should clean the child with lukewarm water and soap. Change the diaper when the child gets wet. Use cornstarch.
- 3.12 Cornstarch is cheaper and just as good as talcum.
- 3.13 If the child gets diaper rash take him to the nurse before it gets too bad.
- 3.14 Parasites weaken children.
- 3.15 Take advantage of parasite medicines provided by the farm. If the nurse is consulted she will provide the medicine that is needed.



## APPENDIX II (cont'd)

- 3.16 Do not use parasite medicine too often (not more often than every six months because it irritates the child's stomach). Do not buy worm medicine prescribed by the pharmacist because it is no good to take the wrong medicine.
- 3.17 To guard against parasite infection, wash your hands before touching food, e.g. when preparing it and when eating it.

4. *Chickens*

Parentheses indicate that these represent *groups* of points, rather than individual points as found in sections 1-3.

- 4.1 (Why good chickens desirable)
- 4.2 (Problems of keeping chickens)
- 4.3 (Help that comes from inoculation)
- 4.4 (Availability of chicks)
- 4.5 (Availability of inoculation)

5. *Incaparina atol*

- 5.1 (Value of Incaparina and price)
- 5.2 (Recipe)
- 5.3 (Reinforcement)

6. *Children's vaccination*

- 6.1 (Importance and value of vaccination)
- 6.2 (Action to be taken)
- 6.3 (Reinforcement)

## APPENDIX III

## Content Strategy: Assigning Principal Points to Media

In Appendix II we outlined some of the principal health/nutrition points we found appropriate for improving the welfare of finca families. Each point was identified by a number (e.g. 1.1, 1.2, etc.). These points are not assigned to programmes randomly but were allocated to specific segments of various programmes throughout the term of the project.

This chart is an abbreviated version of the one used in Guatemala. For illustration purposes, we have inserted, in parentheses, two additional media which could also have been allocated some of these points, if those media had also been used.

A chart such as this helps keep several facets of content under control. First it is useful in guiding the systematic development of an idea -- e.g. the information-motivation-behaviour sequence on vaccinations mentioned earlier. Second, it shows visually where repetition and reinforcement are included in the content strategy, and helps spot places in the schedule where more reinforcement might be necessary. And third, it serves as a means of coordinating the content of different segments of a programme (the novelas, the cuñas, the interviews, etc.). It would also help coordinate the content with other media if they were included in the overall strategy.

Week No. 1					
	Monday	Tuesday	Wednesday	Thursday	Friday
PILA					
Novela	1.1 1.4 1.6	1.1 1.2 1.3	1.4 1.5 1.5 6.1	1.14 1.12 1.13 6.1	1.13 1.14 1.15
Cuñas #1	1.6	1.10	1.9	1.14	6.1 6.2
Feature	a	b	c	d	e
Talk	1.2 1.7	1.10 1.9	1.8	6.2	1.12 1.13
Cuñas #2	1.9	1.6 3.1 3.5	1.11	1.1	1.13
(RADIO ADVERTISING)	1.1	1.1	5.1	6.1	6.1
(POSTERS)	1.1				3.17

Controlling coordination  
of messages in a single programme  
and among several media

----- > ----- > Controlling the logical  
development of messages ----- > ----- >

## APPENDIX IV

## Evaluation Questions (English translation)

## CONTENT

1. What foods are healthful for a woman who is pregnant or breast feeding a baby?
2. At what age should one start to give other foods besides breast milk to a baby?
3. Besides breast feeding a child, what other foods are the first food one can give it that are good for the child?
4. Who is the best person to consult to find out what medicine a sick person needs?
5. Generally, what is the cause of a new-born getting tetanus?
6. What can you use for the babies, that is less expensive and just as good as talcum powder?
7. When making Incaparina *atol*, how many spoonfuls of Incaparina does one use for each glass of *atol*?
8. If a vaccine gives a reaction, does that mean the vaccine is no good?
9. How should one decide what worm medicine to give to children and when to give it?
10. Is there anything one can do to protect chickens from the plague? What?

## THE PILA COMMUNICATION SYSTEM

1. Did you hear the pila recorders? How many times?
2. Did you like the programmes on the pila?
3. What part of the programming did you like best?
4. Could the programmes be heard well?
5. Could one understand what was being explained on the programmes?
6. What would be the best time to listen to this type of programme at the pila?
7. Were the recorders telling the truth?
8. Was what was being said in the programme useful?
9. What kind of information (advice) would you like to have on the recorder?

## THE TAKE-HOME CASSETTE COMMUNICATION SYSTEM

1. Did you listen to the recorders that were being lent at the office?
2. If yes, where?
3. Did you hear the programmes once? More than once?
4. Can you repeat the Incaparina *atol* recipe as it was advised on the recorders? (Ask her to.)
5. Did you try to make the Incaparina *atol* the way it was advised on the recorders?
6. Had you ever made Incaparina *atol* this way before?

## NEWSPAPER CLIPPINGS

SCHOOL FEEDING PLAN TO CATER TO DIFFERENT ETHNIC GROUPS  
*From The Daily Gleaner, Jamaica, 10 March 1978*

Trinidad Government's "feed-the-schoolchildren" plan will create employment for several thousand persons. This has been confirmed by the chairman of the Schools Task Force who said that areas for employment will include people to work in the kitchens and to serve the meals to the children.

Government's plan of providing free meals to schoolchildren will provide a balanced meal for more than 300,000 children daily. Foodstuffs to be used include animal products (beef, pork, chicken and others) amounting to 90,000 lb., vegetables (frozen and fresh) 80,000 lb., peas, beans and others 18,000 lb., staple carbohydrates (rice, macaroni, potatoes, etc.) 45,000 lb.

The children will be served with hot and cold meals and the Task Force will cater to the eating habits of all pupils of ethnic groupings. Among the hot meals planned for Mondays are beef pelau,\* chicken, peas and pumpkin, cucumber and soya-based beverage. Cold meals range from braised beef or pot roast with cabbage and carrot, to egg and channa,\*\* tuna, fortified cold milk or orange, guava, cherry or grapefruit juices.

Children in the 5-10 age group will each get one large roll and those 11 years and over two rolls or two whole sandwiches. More than 500 schools are to benefit from the programme and parents

---

**Editor's Notes:**

\*Pelau or Pilau is a dish based on rice which is first sautéed lightly in oil then steamed in stock or water to which a variety of vegetables, meats or seafood is added. It is a popular dish in Indian and Oriental cuisine.

\*\*Channa otherwise known as chickpea or Garbanzo bean (*Cicer arietinum*).

are free to state whether or not they wish their children to share the free service. ▲

## MEDIA CAMPAIGN TO PROMOTE GOOD NUTRITION AND BREAST FEEDING

*From The Jamaica Daily News, 1 April 1978*



good health begins  
with eating right

Efforts by the Health Ministry to improve the nutrition of Jamaicans will move into a new phase with the launching on 3 April of an intense three-year mass media education campaign. The campaign follows a public awareness programme during which attempts were made to bring to the attention of the society, the high incidence of malnutrition within the nation.

Newspapers, radio, television, posters, billboards and other communication media will be used extensively to carry the campaign's five basic messages:

1. Babies should be breast fed.
2. Babies should be weaned on to nutritious supplementary foods.
3. Pregnant women should eat the right kinds of food.
4. Family planning is a means to a healthier family.
5. Use of the mother and child health services will promote family health.



Special attention will be focussed on the most nutritionally vulnerable groups in the society - pregnant and nursing women and young children.

One factor contributing to the high rate of malnutrition and deaths among Jamaican children is the decline in breast feeding and consequent rise in bottle feeding. The drive to reinstate breast feeding as the basis for sound infant feeding practice will aim at reducing the widespread use of infant formula and all activities to promote infant formula in Jamaica.

The Nutrition Education Campaign operates within the context of the Ministry's Primary Health Care Programme. ▲

#### PATENT MEDICINES AND TONICS DECLARED UNNECESSARY FOR GOOD NUTRITION

*From The Daily Gleaner, Jamaica, 7 March 1978*

In Guyana sportsmen were urged not to be alarmed by the removal of certain patent foods and medicines from local shelves in keeping with the effort to save foreign exchange and promote self-sufficiency.

At a seminar for athletes and sportsmen, the Minister of Health commented that the products were not up to the standard they claimed to be and were really the result of the "legacy of commercialism". At the same seminar a Ministry of Health nutritionist disclosed that sportsmen would get their daily needs of 3,000 to 4,000 calories from foods like rice, flour, sugar and peas with limited supplies of meat. She announced that sugar could easily be substituted for honey especially when the cost was taken into

account, and that there was no need for cod liver oil, Marmite\* and Sanatogen\*\*.

The nutritionist said that Guyanese could get vitamin 'A' from green and yellow vegetables, vitamin 'B' from peas, vitamin 'C' from cherries, and vitamin 'D' from sunlight.

The seminar was organized because of the concern expressed by some people over the banning of certain patent foods and medicines▲

#### PLAN FOR LOCAL BABY FOOD WELL AHEAD

*From the Guyana Chronicle, 30 January 1978*

The Guyana Pharmaceutical Corporation is making steady progress in its plan to manufacture a local weaning food. According to the Corporation's Managing Director the production of the weaning food will be made possible with the arrival in the country of a Brady Extrusion Cooker, an expensive piece of equipment being imported from the U.S.A.

The weaning food will be made of extracts from corn, rice, soyabean and black-eye peas and is expected to serve as a suitable substitute for the imported baby foods which were banned from the country several years ago. The Managing Director explained that the Extrusion Cooker, which members of the Corporation had the

---

#### Editor's Notes:

\*Marmite - A trade name (Marmite Ltd.) for an extract of yeast flavoured with vegetable extract and used as a bread spread, beverage and flavouring agent. It originated and is widely used in the United Kingdom. Contains Ca. 123 mg, Iron 7 mg, vitamin B<sub>2</sub> 5.2 mg, nicotinic acid 59 mg, - per 100 g.

\*\*Sanatogen - A trade name (Genatosan Ltd.) for a preparation of casein and sodium glycerophosphate for consumption as a beverage when added to milk.

opportunity of seeing in operation in Guatemala late last year, will be put into operation after its arrival in the country but the product was not likely to be available for sale to the public until adequate stocks had been built up.

A name had not yet been decided on for the product but the Corporation was likely to sponsor a national competition for the selection of a suitable name. ▲

#### CAJANAQUOTE

*"When you spend your time working with children who are malnourished and you see children dying because they are either getting wrong food or food prepared improperly, it has a devastating effect upon you. It's very hard to think that people who are involved in selling, encouraging people to buy infant preparation, can carry on in this kind of a way, and at the same time pretend that they are not involved in the end results, which is malnutrition, malnourished children".*

- Dr. Alan Jackson  
Tropical Metabolism  
Research Unit, University  
Hospital of the West  
Indies, Jamaica

*Quoted in PAG Bulletin,  
v.7(3-4) p. 8, 1977.*



## NEWS BRIEFS

### GUYANA'S FOOD AND DRUG REGULATIONS NOW IN OPERATION

Copies of Guyana's Food and Drugs regulations are now on sale at Guy\$1.00 each from the Government Analyst Department. The regulations, which were first published in the Official Gazette, set out to establish standards of quality, purity, potency and composition of foods, drugs, cosmetics or medical devices; the condition of sale of these articles; standards for the labelling and advertising of these commodities; and other matters connected with their manufacture and distribution.

The Government Analyst department is also currently engaged in carrying out surveys on several commodities in order to obtain scientific data required in drafting additional food and drug regulations. So far the regulations prescribe standards for only 76 different foods and classes of foods.

The Foods and Drugs Regulations aim at protecting consumers against the adulteration and contamination of foods, drugs, and cosmetic supplies by policing false and misleading claims for food and drugs on labels and in advertisements. They took effect in November 1977. ▲

### JAMAICAN RECIPE BOOK PUBLISHED

"Cook-up Jamaican Style", a 113-page recipe book prepared by the Ministry of Agriculture's Home Economics Division has been published by the Agricultural Information Service.

Compiled by Mrs. Novelette Jones, Extension Officer in the Home Economics Division, it features recipes from officers as well as hints on obtaining the maximum nutrition from locally grown

foodstuffs. The recipes are either revivals of traditional dishes or new and creative departures into hitherto unexplored areas of Jamaican cuisine.

The book was officially launched at a reception at which a wide variety of local products and dishes prepared from recipes in the book were displayed.

Orders for the book, which cost J\$5.00, have been received from the National Agricultural Corporation in Basseterre, St. Kitts and from the West Indian Community in New York, U.S.A. ▲

#### USE OF SI UNITS

In May 1977 the Thirtieth World Health Assembly endorsed the use of the *Système International d'Unités* (SI units) by "the entire scientific community, and particularly the medical community throughout the world" (Resolution WHA30.39). In the same resolution the Health Assembly requested the Director-General to prepare a book on the subject for the guidance of Member States, and all others involved, in making the change to the new system of units of measurement.

The book requested by the Health Assembly has just been published, under the title "The SI for the health professions".

It is largely concerned with the use of SI units in clinical practice. Information on certain public health fields, e.g. air pollution, water quality, and pesticide residues in food is contained in a document which is being distributed with "The SI for health professions". ▲

## PAHO CARIBBEAN PROGRAMME COORDINATOR APPOINTED

Dr. Mervyn U. Henry, who was PAHO Country Representative for Guyana from 1975-1977 has been designated PAHO Caribbean Programme Coordinator (CPC). Prior to joining PAHO, Dr. Henry served as Chief Medical Officer in the Ministry of Health, Trinidad and Tobago. Dr. Henry, who is from Trinidad and Tobago, is a Medical Practitioner with specialization in Pathology and Health Administration. He is based at the Caribbean Programme Coordination Office in Bridgetown, Barbados. ▲

## VISITORS TO CFNI

Dr. Dinesh Sinha, then Assistant Professor in the Department of Maternal and Child Health and Pathobiology at Johns Hopkins University School of Hygiene and Public Health in Baltimore, U.S.A. visited CFNI from 10-12 April 1978. During his visit he presented an illustrated lecture based on his experiences in India, entitled: "The children of Ichag: results and lessons from a study of nutrition and infection in a West Bengal village". Dr. Sinha has recently joined the staff of CFNI as Medical Nutritionist based at the Jamaica Centre.

Dr. Solum Donas, PAHO Medical Nutritionist and Miss Agathe Pellerin, PAHO Nutritionist, both stationed in Haiti, visited CFNI on 4 and 5 May. The visit was designed primarily to help them determine possible ways in which CFNI and Haiti could collaborate in nutrition activities; also to establish links for facilitating the exchange of information and ideas. On 5 May they conducted a Seminar entitled: "Programmes to reduce malnutrition in Haiti". ▲

## FROM THE EDITOR

### A BOOST FOR THE BREAST

In this issue of *Cajanus*, the most heartening news, at least for us at CFNI, is hidden away among the 'Newspaper Clippings'. On page 250 is an item entitled "Milk Company's Service Discontinued".

The campaign against some of the activities of 'milk nurses', those saleswomen masquerading in a nurse's costume, has been long. Readers of *Cajanus* will recall the article "Commerciogenic Malnutrition" by Dr. D.B. Jelliffe in Volume 4 (1971), p. 377. Here Dr. Jelliffe, the first director of CFNI, asked: "Is it ethical to advertise, using modern techniques of motivation and persuasion, infant foods in a population that has no chance financially or hygienically of being able to use them in adequate quantities? Should infant milk foods be widely advertised in regions where breast feeding is currently practiced?"

Also in *Cajanus* (Volume 6, 1973, p. 95) Peter and Alison Heywood published "Please Breast Feed Your Baby and Keep the Bottle for Yourself", in which they gave their own experiences following the birth of their baby, Jacqueline. These included an account of a visit to their home in Jamaica by a 'milk nurse'. The Heywoods made the general point about her visit that "although breast is said to be best all additional advice (given by the 'milk nurse') implies the exact opposite".

In 1975 the book "Hungry for Profits" by Robert J. Ledogar (IDOC/New York) was published. Work carried out by CFNI in Jamaica was quoted (p. 138) as follows: "In addition to product promotion, the nurses give mothers moral support and child-care information. However, among 21 mothers in urban and suburban areas who had been visited by milk nurses and were interviewed by a CFNI researcher, most felt that the nurses had offered very

little information unrelated to the company's products. Unless it was specifically requested, no information was given about the mother's health."

It appears that success in countering the harmful effects of 'milk nurses' can be achieved by a combination of local pressure and influence exerted on the parent companies overseas. Local pressure involves education of both the public and members of the health professions. It involves forbidding the entry of 'milk nurses' into maternity hospitals and clinics. Most importantly, names of mothers recently delivered should not be released to these companies (a practice involving dubious ethics). Government pressure can be exercised through the control of import licences.

Most of the artificial formula companies are subsidiaries of large multinational concerns based in countries such as the U.S.A., Switzerland, the U.K. or Japan. Pressure exerted on public opinion in the host countries can, to use an epidemiological metaphor, act on the infection at its source. The recent lawsuits concerning Nestlé in Switzerland and Bristol-Myers in the U.S.A. have provided useful doses of bad publicity for the companies concerned.

The health services have considerable responsibilities to provide good advice and help to families on bringing up young babies. It is partly because of past failure to fulfil these responsibilities that 'formula saleswomen' have had the success that they enjoyed until recently.

J. Michael Gurney

▲

## TOPICS AND COMMENTS

### THE VITAL ROLE OF DARK GREEN LEAFY VEGETABLES\*

By Roslyn B. Alfin-Slater, Ph.D., and Derrick B. Jelliffe, M.D.

The importance of dark green leafy vegetables (DGLV) in the diet is often underappreciated by many populations, yet these neglected foods are major sources of vitamins and minerals.

Green leaves are natural plant factories powered by solar energy. They are rich in carotene (which forms vitamin A), calcium, iron, vitamin C and the B vitamin, folate (from the Latin word *follum* or leaf). In addition, the leaves contain substantial protein - approximately 30 to 40% of the dry weight with an amino acid composition that complements the protein of cereal grains.

A sufficient daily amount of DGLV is about  $\frac{1}{2}$  ounce for infants and 3 ounces for pregnant and lactating women to ensure the storage of vitamin A in the newborn and to raise the level of vitamin A in breast milk.

Generally, the most nutritious species are those with dark thin leaves. The tender, younger, less fibrous leaves of the plant are usually best for young children since they can be mashed or sieved after cooking. Many DGLV are known by different names and have large numbers of different species. In the tropics, the leaves of food crops such as yam, sweet potato, papaya\*\*, pumpkin, cowpea and some forms of cassava, as well as various species of hardy amaranth and kangkong serve as excellent examples\*\*\*.

---

\*Adapted from the Los Angeles Times home magazine, 5 March 1978.

\*\*Editor's Note: Paw-paw in the Caribbean (fruit of the Carica papaya.)

\*\*\*Examples of DGLV in the Caribbean are the various forms of callalu (bhajee/bhagi/spinach), pak choi (Chinese cabbage/Patchoi), bush cabbage, kale and dasheen leaves. Young pumpkin leaves and young sweet potato leaves are excellent, nutritious and widely available but rarely used.

Populations lacking foods containing preformed vitamin A, which is found in dairy products and liver, experience widespread blindness in young children. This condition could become a rarity if the already available DGLV could be given in sufficient amounts to infants and young children. In fact, it is not unusual to find suitable DGLV growing in and around many tropical communities. The difficulty is in devising suitable ways of preparing and cooking them so that they will still be acceptable to the cultural concepts of appropriate foods.

Generally, DGLV such as watercress are best eaten raw. However, to avoid intestinal parasites in tropical countries, it is always advisable to cook foods. In all cases, cooking should be brief to minimise destruction of nutrients, especially vitamin C. In some areas the leaves of plants are collected when they are abundant and in season and then dried and powdered for later use in soups and sauces. Although a good many nutrients are retained, some are lost by the heat of drying.

Dark green leafy vegetables can not only play an important nutritional role, they can also be easily grown in home gardens. These need relatively little care. Their contents will obviously vary with the tastes of the community and with the ability of the local plant to survive under less than perfect growing conditions.▲

#### CAJANAQUOTE

*"Il faut manger pour vivre et non pas vivre pour manger. (One should eat to live, not live to eat)."*

- Molière (Jean Baptiste Poquelin)  
(1622-1673)

"L'Avare" V

## TOPICS AND COMMENTS

### THE VITAL ROLE OF DARK GREEN LEAFY VEGETABLES\*

By Roslyn B. Alfin-Slater, Ph.D., and Derrick B. Jelliffe, M.D.

The importance of dark green leafy vegetables (DGLV) in the diet is often underappreciated by many populations, yet these neglected foods are major sources of vitamins and minerals.

Green leaves are natural plant factories powered by solar energy. They are rich in carotene (which forms vitamin A), calcium, iron, vitamin C and the B vitamin, folate (from the Latin word *folium* or leaf). In addition, the leaves contain substantial protein - approximately 30 to 40% of the dry weight with an amino acid composition that complements the protein of cereal grains.

A sufficient daily amount of DGLV is about  $\frac{1}{2}$  ounce for infants and 3 ounces for pregnant and lactating women to ensure the storage of vitamin A in the newborn and to raise the level of vitamin A in breast milk.

Generally, the most nutritious species are those with dark thin leaves. The tender, younger, less fibrous leaves of the plant are usually best for young children since they can be mashed or sieved after cooking. Many DGLV are known by different names and have large numbers of different species. In the tropics, the leaves of food crops such as yam, sweet potato, papaya\*\*, pumpkin, cowpea and some forms of cassava, as well as various species of hardy amaranth and kangkong serve as excellent examples\*\*\*.

---

\*Adapted from the Los Angeles Times home magazine, 5 March 1978.

\*\*Editor's Note: Paw-paw in the Caribbean (fruit of the Carica papaya.)

\*\*\*Examples of DGLV in the Caribbean are the various forms of callalu (bhajee/bhagi/spinach), pak choi (Chinese cabbage/Patchoi), bush cabbage, kale and dasheen leaves. Young pumpkin leaves and young sweet potato leaves are excellent, nutritious and widely available but rarely used.



Populations lacking foods containing preformed vitamin A, which is found in dairy products and liver, experience widespread blindness in young children. This condition could become a rarity if the already available DGLV could be given in sufficient amounts to infants and young children. In fact, it is not unusual to find suitable DGLV growing in and around many tropical communities. The difficulty is in devising suitable ways of preparing and cooking them so that they will still be acceptable to the cultural concepts of appropriate foods.

Generally, DGLV such as watercress are best eaten raw. However, to avoid intestinal parasites in tropical countries, it is always advisable to cook foods. In all cases, cooking should be brief to minimise destruction of nutrients, especially vitamin C. In some areas the leaves of plants are collected when they are abundant and in season and then dried and powdered for later use in soups and sauces. Although a good many nutrients are retained, some are lost by the heat of drying.

Dark green leafy vegetables can not only play an important nutritional role, they can also be easily grown in home gardens. These need relatively little care. Their contents will obviously vary with the tastes of the community and with the ability of the local plant to survive under less than perfect growing conditions.▲

#### CAJANAQUOTE

*"Il faut manger pour vivre et non pas vivre pour manger. (One should eat to live, not live to eat)."*

- Molière (Jean Baptiste Poquelin)  
(1622-1673)

"L'Avare" V



### YES, THE COW CAN INDEED BE A WHITE ELEPHANT

A reply to J.B. Kendrick, Jr. by Martin Buxedas

In 1977 (Vol. 10, No. 2, pp. 81-23) of *Cajanus* we published a paper by J.B. Kendrick, Jr., Vice President and Agricultural Sciences Director of the Agricultural Experiment Station, University of California, entitled "Is the Cow a White Elephant?" It propounded the theory that livestock\* make a valuable contribution to human food supply, providing high quality protein and other nutrients as well as useful by-products, and utilize as grazing land large areas of the earth's surface which are unsuitable for cultivation. Kendrick disagrees with the notion that animal production is necessarily wasteful and argues for the continued co-existence of plants and animal resources in world food supply.

Martin Buxedas, FAO Regional Officer for Agricultural Planning and Marketing based in Santiago, Chile, sent us this note which presents some views to the contrary. His opinions are his own and should not be taken as necessarily representing the views of FAO or of the Inter-Agency Project for the Promotion of National Food and Nutrition Policies to which he is attached.

---

\*Editor's Note: In both articles it seems that the word livestock usually refers to cattle.

In my opinion the article "Is the Cow a White Elephant?" by J.B. Kendrick, Jr. (*Cajanus*, Vol. 10, No. 2, 1977) may induce readers to erroneous conclusions and, eventually, to wrong decisions as to the proper use of resources for human nutrition.

In human nutrition, livestock can be effectively substituted by a large and varied quantity of animal products and, more recently, by products of non-conventional sources. The biological value of meat protein is less than that of eggs or milk. Thus the apologetic affirmation of J.B. Kendrick, Jr., that livestock provides "high quality protein, vitamins, minerals and other nutrients...", applies to other products as well.

Kendrick states that the principal grains fed to livestock are not widely used by human populations. However, he does not mention the alternative possibility that they can be converted by other kinds of animals or that the productive resources utilized for the feeding of livestock could be used in the production of other human food. This way, for example, vast areas used for the cultivation of maize (corn) could be used in the production of soyabeans.

The importance of the by-products can hardly justify livestock production in comparison with grain and other concentrated foods.

While cattle are efficient converters of pasture and other bulky feed, in some cases milk production might have priority over meat. It is true that in some situations people will continue to make improper use of agricultural resources. However, from a social viewpoint livestock production is justified only in cases where there is no other use for local resources. On the other hand it cannot be justified when grain or other concentrated foods are used as feed, a system that dominates the feeding process in the United States, and in some other developed countries.

Table 1 provides data on the efficiency of various animals consumed by man as converters of energy and protein. Efficiency of livestock measures the percentage of dietary crude protein and energy converted to products edible by man. The highest efficiencies in the conversion of both protein and energy are found in the production of eggs and milk. Cattle and sheep raised for slaughter have a low efficiency, but because their diets can be composed largely of material that is inedible to man their production can result in a net gain for human nutrition.

Table 2 demonstrates the declining efficiency of feed conversion to meat that has occurred and is expected.

The answer to the question stated in the article by Kendrick is, that where social judgements prevail in the allocation of resources cows can indeed be white elephants.

Table 1: Efficiency of Animals Used by Man as Converters of Energy and Protein

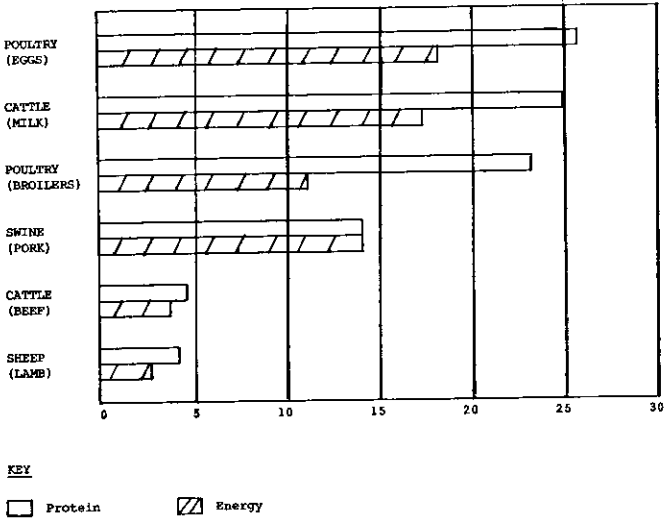


Table 2: Trends in Gross Feed Conversion Efficiency of Livestock<sup>(a)</sup> (Kg. feed per Kg. Liveweight)

	1940	1970	1985
Beef	10.0	7.5	5.0 <sup>(b)</sup>
Pork	3.9	3.3	2.5
Milk	1.2	0.7	0.4
Poultry	4.5	2.2	1.8
Eggs	3.5	3.0	2.5

(a) Basically applicable to U.S.A. conditions only but the trends should be similar in many other parts of the world.

(b) Range conditions.

Source: University of California, "A Hungry World: The Challenge to Agriculture", General Report by University of California Food Task Force, Division of Agricultural Sciences, University of California, July 1974, Table 4.5.

Cited in: OECD. World Supply and Demand of Major Agricultural Commodities. Paris, OECD 1976, p. 76, Table 11.

#### CAJANAQUOTE

*"That we are addicted to sweets, and that the ill and fat among us must satisfy the addiction somehow, even when sugar threatens harm, is a cultural phenomenon, not a biological imperative..."*

- From an Editorial in  
'The New York Times'

## OYSTER CULTURE EXPERIMENT IN JAMAICA\*

Research into the feasibility of oyster culture for commercial purposes is currently being carried out at Bowden, on the south coast of Jamaica, by the Zoology Department of the University of the West Indies. The project is being undertaken jointly by the International Development Research Centre (I.D.R.C.) of Canada, the Jamaican Government, and the U.W.I., with the cooperation of Goodyear Jamaica Ltd. A Technical Advisory Committee, comprising representatives of Government and U.W.I., has been set up to administer the programme.

The potential for oyster culture has long been recognized by the marine scientists, but there was worldwide divergence of approach to the subject. Traditionally, Far Eastern countries approached the subject at the level of the individual artisan using quite simple methods with much success. Western Countries, on the other hand, tried more sophisticated scientific methods which, theoretically, have good potential but have resulted so far in only mixed success.

The I.D.R.C. decided that what developing countries needed was not the Western-type method, but a controlled improvement on the Far East method. On this basis, the I.D.R.C. has started funding research programmes in countries including Jamaica and Cuba in the Caribbean. Collaboration is being promoted between these international projects.

## USE OF TYRES

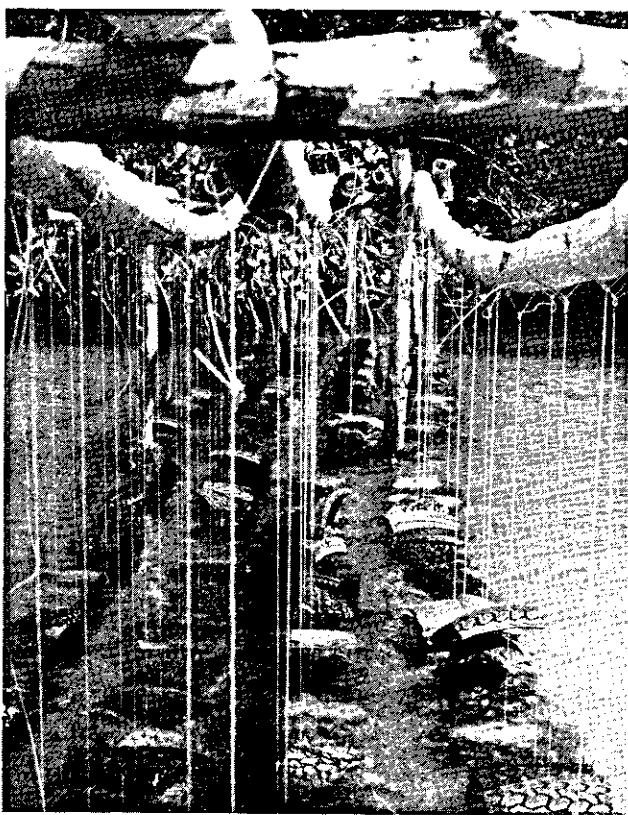
A crucial part of oyster culture is the collections of spat (young oysters). All over the world, several methods have been tried to select a material with an ideal surface on which oysters

---

\*Adapted from the Daily Gleaner, Jamaica, 29 March 1978.

would settle. Materials have varied from bamboo, coconut shells, plastic bottles, roofing tiles and any available waste material. But each of these materials in turn creates some problems for the researcher.

Finally, based on the success achieved by the Fisheries Department in collaboration with *Goodyear*, using discarded tyres for fish development on artificial reefs,\* the oyster-culture



*At Bowden (St. Thomas) Jamaica, the tyre sections used as spat collectors strung in groups of four and spaced about 1" apart.*

*[Photo: Goodyear Jamaica Limited]*

---

\*Editor's Note: See Cajanus, Vol. 10, No. 3, p. 174.

Jamaican project started experimenting with this material. So successful has been the result that other countries, notably Cuba and Colombia, are showing interest in the Jamaican method.

The Bowden project has the cooperation of Goodyear Jamaica Ltd., which supplies the tyres. Rubber has advantage over other materials in that (a) it is pliable and easily manipulated, (b) it has a smooth surface which permits removal of the oysters without damage, (c) it is indestructible in salt water and (d) it has proven attractive to oysters.

#### METHOD

The carcass of the tyre is cut into rectangles of about 5" x 7" and threaded into strings of 4 each spaced at about 1" apart. The strips are then suspended in the water from wracks containing 4 rows of 40 strings each. This gives a total of 640 rectangles to each wrack.

It is necessary to establish the breeding cycle of the oysters as the ideal time in which to set the collectors. In Jamaica, these periods have been identified as occurring after the rainy periods in May and October, and last for two to three months. If the collectors are set for too long a period before the breeding time, other marine organisms will foul them.

The collectors are ideally placed in the water between tidal levels so that they are periodically exposed to air. This will have the effect of destroying other fouling organisms but will not affect the oysters which can survive in air for fairly long periods, providing they are kept damp. The spat should settle on the collectors over a period of one to two weeks.

After the collection of the spat, the operating method is changed. The spat collectors are removed from the wrack and restrung on rafts, being more widely spaced (from the original 1"



to about 6"). They are also attached with longer strings so as to effect suspension at greater depths. The reason for this is that at this stage, the spat will grow faster than other fouling organisms and will be able to feed constantly if submerged in the water body. This process eliminates the necessity for inter-tidal placings. The rafts, being mobile, can then be moved from location to another in search of food or cleaner water or to avoid disturbances, as in the case of a hurricane.

It has been found that a sector of 20 to 30 oysters may be attracted to each collector and sometimes up to 100. In such an event, the population density can be reduced by removing some of the oysters and placing them in other situations. The full growing period - from collection to marketing - covers a period of 6 to 9 months.

#### *THE JAMAICAN OPERATION*

Bowden in the parish of St. Thomas has been chosen as the ideal site for the initial experiment because (a) it is near and accessible to research facilities and (b) the oyster population has not been over-exploited. Other areas have, however, been identified at Galleon Harbour and West Harbour, off Portland Bight in St. Catherine, and Bogue Sound, near Montego Bay.

The problem in Jamaica is that the oyster population has been over-exploited to the point of near decimation. Secondly, mangroves have been depleted by real estate development and other ecological factors.

The local oyster culture project is being developed with the use of natural population instead of imported spat. The methods are designed along lines which could be eventually adapted by local fishermen and use readily available materials so as to reduce cost.

The programme is not being geared to producing oysters for the gourmet market which requires strict rules of sizes, shapes and sanitation. On the other hand, oysters are protein-rich and lend themselves to a variety of food preparations, including soups and stews; so that producing for the general public is an attractive proposition for social and economic reasons.\*

The feasibility studies cover a wide range including scientific methods, economic considerations and implementation which would ideally involve local fishermen. The scientific and economic feasibility should under normal conditions, be ascertained over a two-year period. Production and marketing studies will follow.

---

\*Editor's Note: Oysters (Ostrea edulis) bivalve, only 10-15% of weight is meat; cultivated at 100 per square yard yields 25 tons to the acre or 2.5-3.7 tons net weight of meat, take 5 years to reach marketable size. It is hard to imagine that they will ever have a good nutrient-cost value unless harvested direct from the sea without cost.

Nutrient composition: (Raw) - Water 86%, protein 10%, fat 1%, carbohydrate trace only, kcal 50 (0.21 MJ), Ca 190 mg, Iron 6 mg, vitamin A 75 ug, B<sub>1</sub> 0.1 mg, B<sub>2</sub> 0.2 mg, nicotinic acid 1.5 mg - per 100 g. ▲

## THE MARK-UP AND THE SOFT-SELL\*

*by**J.M. Gurney**THE EXTENT OF MALNUTRITION*

Malnutrition is a serious problem in the English-speaking Caribbean countries. Highlights of the most recent available data on nutritional status in Commonwealth Caribbean countries and Suriname appear in Table 1, taken from an earlier paper and updated (Gurney, 1975). We can conclude as follows:

1. The average infant mortality rate in the Commonwealth Caribbean is almost twice that in North America, and the toddler mortality rate is four times as high. This is an indication of the deadly combination of malnutrition and infectious diseases.
2. 1.3 in every 100 children under five are very severely undernourished and in imminent danger of death. A further 11% are definitely underweight and 39% more are in a borderline condition.
3. The overall availability of dietary energy sources is slightly more than estimated needs, while protein supplies are adequate.

---

\*Slightly shortened version of a paper presented at the Seminar on Food Marketing for Better Nutrition, 13-15 March 1978, Caribbean Food and Nutrition Institute, St. Augustine, Trinidad. Dr. Gurney is the Director of the Caribbean Food and Nutrition Institute.

4. However, the available food is distributed very unequally so that more than half our households do not get enough dietary energy and a slightly smaller subset of this group do not get enough protein. Iron and certain vitamins are also unequally distributed. But a widespread lack of dietary energy is the main problem.
5. This maldistribution of nutrients is significantly associated with the maldistribution of wealth and of family dependants, the poor and the large families being the most underfed.

#### *MALNUTRITION AND MALDISTRIBUTION*

Human malnutrition in the Caribbean and elsewhere is basically a problem of distribution. Food marketing in turn concerns the distribution of foodstuffs. Therefore, if we are to reduce the burden of malnutrition, we must consider marketing. Conversely any marketing policy should take account of its nutritional implications. There is a maldistribution of food supply to and in the Caribbean; this is largely, but not entirely, caused by a maldistribution of purchasing power. Therefore food marketing must concern itself with purchasing power in the interests of the consumer. This concern is also necessary to ensure a good market for the farmer since data from Latin American countries and India show that a more equitable income redistribution leads to greater consumption of basic commodities, even if there is no increase in the average per caput income (FAO Secretariat, 1976). Basic food commodities are what are needed to improve nutrition.

Table 1: Data on Nutrition Related Mortality, Nutritional Status, Dietary Intake in the Commonwealth Caribbean and Suriname (July 1977)

Country	Population in thousands (1975 estimates)	Mortality		Nutritional Status					Dietary Food Intake			
		Infant mortality rate per 1,000 live births	1-4 years mortality rate per 1,000 in age group	Percentages of children under five years old in three grades of low weight according to Gomez scale			Percentages of children under five years old in three grades of anaemia	Per caput nutrient availability (from food balance sheets)	% of households not meeting requirements (from food consumption survey)		% of nutrient from imported foods (from food balance sheets)	
				1	2	3			Energy	Protein	Energy	Protein
Jamaica	2,043	26	4.6	39	9	1.4	Hb <8.0 Hb 8.0-9.9 Hb 10.0-10.9	2,528			46	62
Trinidad & Tobago	1,060	34	2.1	37	11	1.4		2,431	40	31	49	71
Guyana	760	40	5.8	44	17	1.4	1 9 31	2,819	75	64	34	42
Surinam	419	30	-	-	-	-	←20→	2,787	-	-	-	-
Barbados	30	1.3	36	3	0.2		8 15 32	2,927	58	42	58	76
Bahamas	193	35	1.7									
Belize	140	34	4.1	40	18	1.2						
St. Lucia	111	30	2.3	33	9	1.9	0 8.6 5.7	2,271	72	30	65	67
Grenada	108	24	1.4	29	9	1.6	←38→					
St. Vincent	100	64	4.3	47	14	1.5						
Antigua	74	19	0.4	36	7	0.8						
Dominica	74	45	5.9									
St. Kitts/Nevis	48	43	3.6	33	7	0.3						
Montserrat	13	42	2.9	20	2	0.2						
Cayman Islands	13	18	1.0	14	2	0.0						
Turks & Caicos Is.	6	47	-	<7	0.3		←39(<10.5G%)					
Commonwealth Caribbean & Suriname	5,406	32	3.8	39	11	1.3		2,592	56	44	46	62
North America		18	0.8	16	0	0.0						
South America		60	4.2	-	-	-						

Note: The Commonwealth Caribbean and Suriname figures are means weighted by the population of each country for which data are available.

The maldistribution of food supply may be considered in three categories:

1. *Maldistribution between Nations:* The "North-South Dialogue" and efforts to correct the inequitable terms of trade between nations are relevant.
2. *Maldistribution within Nations:* This is related mainly to income and partly to availability of retail outlets. Here price control policies, food distribution systems, feeding projects for special groups, producers and consumers cooperatives all should play their appropriate parts. In the Caribbean context, the distribution elements of the Regional Food Plan, coordinated through CARICOM, should perhaps be considered along with the generally more insular national considerations.
3. *Maldistribution within Families:* Here we should consider the particular needs of the different family members - infants or growing children, pregnant or breast feeding mothers, or working fathers. Maldistribution of available food in this context is largely a question of knowledge of needs, made more acute by the constraints imposed by poverty. Appropriate food promotion campaigns and distribution programmes aimed at these special groups, often through the health services, are needed.

#### THE PURPOSE OF MARKETING

The main purpose of food marketing should be to ensure a fair distribution and availability of nutrients to all the population. The objectives of marketing should be social objectives. In 1975 the Food and Agriculture Organization stated in a paper on Food Marketing Programs for Improved Human Nutrition (FAO Marketing

Group et al, 1975) that "the crucial dilemma of food marketing - how to channel available food supplies to needy consumers in a suitable form and at prices which they can afford - has not yet been reviewed in the context of world nutrition with the degree of urgency it merits". I think it is fair to say that in the Caribbean we are experiencing some very relevant developments aimed explicitly at improving human nutrition through marketing management. Will these developments enable us to reconcile the interlocking needs of farmers, consumers, balances of payments and the social and political aspirations and needs of the people?

Let us consider some definitions of marketing:

Websters International Dictionary (1971) defines marketing as "an aggregate of functions involved in transferring title and in moving goods from producer to consumer including among others buying, selling, storing, transporting, standardizing, financing, risk bearing and supplying market information". This definition states functions but does not even imply that marketing has any underlying purpose.

The United Kingdom Institute of Marketing, appreciating some moral purpose in the activity, defines marketing as "the creative management function which promotes trade and employment by assessing consumer needs and initiating research and development to meet them. It coordinates the resources of production and distribution of the goods and services; determines and directs the nature of the total effort required to sell profitably the maximum production to the ultimate user" (Appleby, 1976). This gets closer to recognising the need to correct the problems of distribution we are discussing but does not go so far to assert a prime social function for marketing..

In his book "Small is Beautiful", the late E.F. Schumacher (1973) looks at marketing in relation to the unsatisfactory way in which he thought most economists consider their own discipline.

He considered that many economists do not take enough account of appropriate social purpose and the need for a healthy relationship between mankind's economic activities and our environment.

Schumacher wrote as follows (pp. 39-40):

*"Economics deals with goods in accordance with their market value and not in accordance with what they really are. The same rules and criteria are applied to primary goods, which man has to win from nature, and secondary goods, which presuppose the existence of primary goods and are manufactured from them. All goods are treated the same, because the point of view is fundamentally that of private profit-making, and this means that it is inherent in the methodology of economics to ignore man's dependence on the natural world.*

*"Another way of stating this is to say that economics deals with goods and services from the point of view of the market, where willing buyer meets willing seller. The buyer is essentially a bargain hunter; he is not concerned with the origin of the goods or the conditions under which they have been produced. His sole concern is to obtain the best value for his money.*

*"The market therefore represents only the surface of society and its significance relates to the momentary situation as it exists there and then. There is no probing into the depths of things, into the natural or social facts that lie behind them. In a sense, the market is the institutionalisation of individualism and nonresponsibility. Neither buyer nor seller is responsible for anything but himself. It would be 'uneconomic' for a wealthy seller to reduce his prices to poor customers merely because they are in need, or for a wealthy buyer to pay an extra price merely because the supplier is poor. Equally, it would be 'uneconomic' for a buyer to give preference to home-produced goods if imported goods are cheaper. He does not, and is not expected to, accept responsibility for the country's balance of payments."*

Clearly for us in the Caribbean, and for people in other parts of the world, marketing should not represent "only the surface of society". Food marketing can and should be a prime



method of ensuring a fair distribution of nutrients and thus of eliminating malnutrition in our society.

#### CARIBBEAN DEVELOPMENTS

Some years ago in a Western Pacific Island I visited markets which were perhaps good examples of basic marketing without frills. The farmers came down from the hills with their produce - mainly roots - and exchanged them with the products - chiefly fish - of the salt water people. The exchanges were direct without intermediaries and money was only rarely used. Following the principles of *caveat emptor* - may the buyer beware - both parties were usually armed; however, the market was an important place for the exchange of information as well as of goods. The producers were both retailers and consumers, and, where necessary, public relations men. Clearly this procedure is suitable for only the most simply organized society and is quite inappropriate for the modern world. In fact, marketing as we understand the term was almost completely lacking.

Despite the vastly greater complexity of the food marketing process in the English-speaking Caribbean and the undoubted benefits which have resulted, in terms of overall quality of life, nutritional status of the poor majority of our people remains unacceptably low. There are distortions that have developed in our food marketing system. Perhaps the greatest local (as compared with imported) paradox that we should consider is that small farmers do not get enough money for their considerable labour, while consumers have to pay too much for the products of these same small farmers. Let us not too hastily blame the higglers or hucksters; the fault lies deeper in the system (McIntosh, 1977).

It appears paradoxical too that locally produced foodstuffs often cost more for their available nutrients, even though they are produced near to where they are consumed, than do imported items. This is due to marketing factors and nutritional content as well as

to factors concerned with production. Tables 2 and 3 list in ranking order the six cheapest sources to consumers of dietary energy and of protein in various Caribbean countries in 1976. Many of these items are imported. The data are derived from nutrient-cost tables compiled by CFNI.

Involvement of Caribbean Governments with food marketing has traditionally been from the producers' end - helping farmers to dispose of their products and providing some inputs of fertilizer, tools and so on to assist farmers in their production. Less attention has been given to market research, to promotion, to determining local consumer needs or to nutritional considerations.

More recently the interests of consumers have come to the forefront. There are signs that governments are beginning to consider the opportunities for improving human nutrition through food marketing management: in other words, that they are going beyond profits to consider social benefits.

#### *SOCIAL MARKETING*

The implication here is that in the Caribbean our concepts of marketing are being widened to encompass what has been termed "social marketing". "Social marketing" has been defined as "the design, implementation and control of programmes calculated to influence the acceptability of social ideas and involving consideration of product planning, pricing, communication, distribution and marketing research" (Kotler and Zaltman, 1971).

Table 2: The Six Cheapest Sources of Dietary Energy (In Order of Cheapness) - 1976

JAMAICA	TRINIDAD & TOBAGO	GUYANA	BARBADOS	BELIZE	ST. LUCIA	GRENADA
Brown sugar	Brown sugar	Brown sugar	Brown sugar	Counter flour	Oil, pure, all kinds	Bananas, green
Soda crackers	Counter flour	Parboiled rice	Cornmeal	Vegetable shortening	Potatoes, sweet	Peanuts, roasted & salted
Cornmeal	Parboiled rice	Cornmeal	Parboiled rice	Parboiled rice	Brown sugar	Oil, pure, all kinds
Granulated sugar	Oil, pure, all kinds	Counter flour	Counter flour	Red peas	Bananas, green	Brown sugar
Margarine	Pre-packaged flour	Oil, pure, all kinds	Oil, pure, all kinds	Pre-packaged flour	Pre-packaged flour	Cornmeal
Counter flour	Cornmeal	Vegetable shortening	Vegetable shortening	Oatmeal or rolled oats	Cornmeal	Vegetable shortening

ST. VINCENT	ANTIGUA	DOMINICA	ST. KITTS/ NEVIS	MONTserrat	GRAND CAYMAN
Oil, pure, all kinds	Oil, pure, all kinds	Oil, pure, all kinds	Brown sugar	Margarine	Pre-packaged flour
Brown sugar	Cornmeal	Bananas, green	Whole dried milk	Parboiled rice	Counter flour
Counter flour	Parboiled rice	Counter flour	Parboiled rice	Pre-packaged flour	Vegetable shortening
Parboiled rice	Vegetable shortening	Parboiled rice	Counter flour	Oil, pure, all kinds	Margarine
Bananas, green	Pre-packaged flour	Cornmeal	Cornmeal	Brown sugar	Oil, pure, all kinds
Cornmeal	Margarine	Brown sugar	Vegetable shortening	Counter flour	Parboiled rice

Table 3: The Six Cheapest Sources of Protein (In Order of Cheapness) - 1976

JAMAICA	TRINIDAD & TOBAGO	GUAYANA	BARBADOS	BELIZE	ST. LUCIA	GRENADA
Dried skim milk	Counter flour	Counter flour	Black eye peas	Tripe	Dried skim milk	Peanuts, roasted & salted
Counter flour	Split peas	Cornmeal	Split peas	Red peas	Tripe	Dried skim milk
Cornmeal	Salt beef	Parboiled rice	Pigeon peas (dry)	Split peas	Split peas	Split peas
Soda crackers	Parboiled rice	Split peas	Cornmeal	Black eye peas	Pigeon peas (dry)	Bananas, green
Red peas	Lentils	Codfish, salted	Dried skim milk	Counter flour	Codfish, salted	Lentils
Codfish, salted	Codfish, salted	White bread	Red peas	Lentils	Lentils	Black eye peas

ST. VINCENT	ANTIGUA	DOMINICA	ST. KITTS/ NEVIS	MONTserrat	GRAND CAYMAN
Dried skim milk	Mackerel (canned)	Dried skim milk	Whole dried milk	Whole milk	Black eye peas
Split peas	Tripe	Pigeon peas	Fish, fresh	Tripe	Pre-packaged flour
Black eye peas	Cornmeal	Split peas	Liver	Pre-packaged flour	Split peas
Tripe	Black eye peas	Lentils	Counter flour	Counter flour	Counter flour
Lentils	Lentils	Counter flour	Codfish, salted	Split peas	Red peas
Red peas	Codfish, salted	Red peas	Oatmeal or rolled oats	Codfish, salted	Pigeon peas

Marketing has the double function of adapting supply to demand and of influencing demand. This second function - the promotional one - has in the Commonwealth Caribbean been largely left to the commercial distributors. Thus the low-income public have suffered in having unsuitable products thrust upon them. The farmers also have suffered because their representatives have devoted too little energy to promoting their products and to developing their local market outlets. The farmers' representatives have paid too little attention to finding out consumer needs in relation to production possibilities. Consequently, national economies have suffered from a growing dependence on unsuitable imports.

Wickstrom (1974) in his paper entitled "The Function of Promotion in Social Marketing", discusses this wider concept of marketing as follows:

*"What, however, really distinguishes the social marketing approach from the commercial is that the social marketing approach takes into account a much richer goal structure and that the success of the programmes cannot be judged until it has been found whether the socially desirable goals have been fulfilled. An important part of the social marketing programme will be to define and quantify the goals that should be attained. The marketing operations as such can also in social marketing include both products, services and ideas. In a food company using conventional marketing, success is reached when a good market has been established and the corporate goals of profits, etc. have been attended to. The social marketing approach would need more information such as concerning the nutritional effects of the consumption and no success would then be claimed unless pre-set nutritional goals were reached. Social marketing has its importance as a change process, but first the desired change has to be defined. From this it is also apparent that social marketing as a basis for its performance requires very good planning and also more diversified information on market reactions than does conventional marketing."*

In my view marketing programmes should have a moral purpose. I submit that, in food marketing, the prime objective should be improvement of the nutritional status of the under-nourished members of the population.

We can consider orienting product marketing programmes towards defined nutrition objectives and specific target groups through "social marketing" management methods. Alternatively, we can improve food marketing policies, structures and channels so as to increase economic and nutritional benefits to the consumer population as a whole (Wilkie, N.A. pers. com.).

I suspect that our first concern will be with the latter more general approach, but we should not forget the former. Food marketing in the Caribbean must be concerned with good returns for the farmers and reasonable prices for the consumers - the mark-up - and with promotion and nutrition education - the soft-sell.

#### REFERENCES

1. Appleby, R.C. *Modern business administration*. 2nd ed., London, Pitman, 1976, p. 149.
2. FAO Marketing Group, AGS, Education, Training and Research Group, ESN. "Food marketing programs for improving human nutrition", *PAG Bull.*, 5(4), 1975, pp. 2-10.
3. FAO Secretariat. "Food marketing". In Beaton, G.H. and Bengoa, J.M. *Nutrition in preventive medicine*, Geneva, World Health Organization, 1976 (Monogr. Ser. No. 62).
4. *A food and nutrition policy for Jamaica - with programmes for incorporation into the national development plan 1975/76 - 1977/78*, Kingston, Jamaica, Nutrition Advisory Council, 1974.
5. *A food and nutrition policy for St. Lucia - with programmes for incorporation into the national development plan 1975-1980*, Castries, St. Lucia, Government of St. Lucia, 1975.

6. Gurney, J.M. "Available data on the state of food and nutrition of the peoples of the Commonwealth Caribbean". *Proc. 10th West Indies Agr. Economics Conf.* St. Augustine, Trinidad, Vol, 1, 1975, pp. 66-75. (also published in *Cajanus*, 8(3), 1975, pp. 150-166.
7. Kotler, Ph. and Zaltman, G. "Social marketing - an approach to planned social change". *J. Marketing*, 35, 1971, pp. 3-10.
8. McIntosh, C.E. *Report on analysis of food prices in Trinidad & Tobago*. St. Augustine, Trinidad, Caribbean Food and Nutrition Institute (CFNI-T-8-77), 1977.
9. Schumacher, E.F. *Small is beautiful - a study of economics as if people mattered*. London, Blond and Briggs, 1973.
10. Wickstrom, B. "The function of promotion in social marketing". In *Proc. FAO/SIDA regional workshop on food promotion in East Africa*. Rome, FAO, 1974. ▲

#### MOTHERHOOD PAYS DIVIDENDS!

Among the new benefits offered to prospective mothers in the German Democratic Republic is the opportunity to stay at home with full pay to care for their babies - for 6 weeks before birth and 20 weeks after. If a mother already has one child, she can stay away from her job until the baby's first birthday, with a return to her old job and a minimum payment of 300 marks\* a month guaranteed by the state. Once back on the job, her working day is 45 minutes shorter. The new regulations also give women over 40, married or single, with or without children, one day off a month as a "household day." Health care is virtually compulsory as the final installments of the baby bonus are paid only after baby's first four medical checkups.

- INTERCOM

March 1978

---

\*Editor's Note: US\$147.06.

## COUNTING THE CALORIES, OR JUGGLING WITH JOULES\*

*by**J. Peter Greaves*

What's in a name? What we're doing is Estimating Energy. And every schoolboy knows at least two things about energy: that it is conserved, and that it is interconvertible. The first law of thermo-dynamics, as enunciated by Flanders and Swann, sets this out very plainly: "Heat is Work and Work is Heat".

A calorie is a unit of heat, and is defined as the amount of heat required to raise the temperature of one gram of water through one degree centigrade. A joule (pronounced like a girl's best friend) is a unit of energy and is defined\*\* in terms of basic units of mass, length and time, without reference to any particular substance, such as water. Between these units there is an exact numerical relationship.

The equivalence between energy and heat was first demonstrated by an Englishman, James Prescott Joule, born in Salford in 1818, who in 1943 at a meeting of the British Association read a paper entitled "On the Calorific Effects of Magneto-Electricity and on the Mechanical Value of Heat". In this paper he gave the first experimental estimate of the amount of work energy that must

---

\*Reproduced with the permission of Forbes Publications Ltd., Hartree House, Queensway, London W2 4SH, England, from "Nutrition and Food Science" (journal). Dr. Greaves, who is Senior Programme Officer of the UNICEF South Central Area Region, New Delhi, India, was formerly Secretary of the British Nutrition Foundation.

\*\*Formally, one joule is the amount of energy needed to accelerate a mass of one kilogram by one metre per second per second over a distance of one metre.



be completely converted into heat in order to give one unit of heat. Seven years later he was elected a Fellow of the Royal Society.

#### *THE SI SYSTEM*

Despite Churchill's warning; "Sir, beware of innovation, especially when guided by pure logic", it is evident that the world is moving towards the adoption of a common system of measurement, namely the metric system\*, which was invented in national France about the time of that country's Revolution, and spread to several other countries in the wake of Napoleon. Although the calorie is a traditional metric unit, it is not recognised in that particular form of the metric system commonly known as SI (for Systeme International d'Unités) which about thirty governments have formally approved. SI is an extension and refinement of the traditional metric system which is described as embodying features which make it logically superior to any other system as well as practically more convenient: it is rational, coherent and comprehensive. In this system all units are derived from six basic units, and the unit of energy in all forms (and energy can be classified as chemical, thermal, mechanical, electrical, radiant or nuclear) is the joule. This means that such energy units as the calorie (which in fact can be defined in at least three ways, each of which has a slightly different numerical relationship to the joule), the foot pound and the British thermal unit will become as obsolete as the proverbial perch.

---

\*Editor's Note: See Cajanus 10(1), 1977, p. 7 and Cajanus 11(2), 1978, p. 80.

## THE UNITS

The calorie familiar to nutritionists is equivalent to 4.184 joules (J). In practice, of course, nutritionists use the kilocalorie, usually written kcal or, sometimes in the older literature, as Calorie. This is equivalent to 1000 calories, and the same prefix can be used with joules: thus 1 kcal = 4.184 kJ. The kilojoule is a useful size unit for expressing the energy value of foods, and indeed the 1970 edition of the Manual of Nutrition<sup>1</sup> contains a table of food composition where both the kcal and kJ are used. Those who think of a slice of bread as providing about 70 kcal will no doubt in time come to think of it as providing 290 kJ. However, for some purposes, such as when considering energy requirements, the kilojoule is inconveniently small, and the prefix 'mega', denoting one million, can then be applied. Thus the daily energy requirement of an active man, say 3000 kcal, can be expressed as 12.6MJ (mega-joules) and such figures are also given in the Manual of Nutrition.

The Royal Society has recently published a Report<sup>2</sup> on Metric units, conversion factors and nomenclature in nutritional and food sciences, which, while recommending the use of SI in nutritional sciences, recognises that there will be no easy solution to the problem of educating the public to accept the concept that man has a requirement for the energy-yielding constituents derived from food and that these are measured in joules, in place of the concept that man has a calorie requirement which is met by eating calories contained in food. The Report lists examples of ways in which terminology involving the use of the word 'calorie' (or its derivatives) might be changed: for example, 'energy intake' should be used instead of 'calorie intake'. In general, where 'calorie' was used in a qualitative sense, the word 'energy' can usually be used in its place; where used in a quantitative sense, the expression should be in joules. Thus the Report recommends that for computing the energy value of foods from their chemical

composition, the following factors should be used: for protein, 17 kJ/g; fat, 37 kJ/g; carbohydrate (as mono-saccharide), 16 kJ/g; and ethyl alcohol, 29 kJ/g.

### THINKING S1

While both the calorie and the joule will no doubt be used for some time, the sooner people start to 'think S1' the better. Thus - what is a woman's average energy requirement? - about 10 MJ daily.

We have survived the decimalization of our monetary currency without undue trauma. The 'new penny' of our energy currency is the joule, and just as we experience no difficulty in shifting the decimal point two places to convert pennies into pounds, we should have no problem in shifting it three places to convert kJ into MJ. When those children who are already being reared on S1 start thinking about nutritional physiology, as some already are, the whole process will of course be automatic.

Those who share the regret of Lord Badminton (alias Peter Sellers) that: "It is not everything, I fear, which has changed for the best", might accept the wisdom of the Chinese advice to relax and enjoy the inevitable - and after all, what's in a name?

### FOOTNOTES

1. Great Britain. Ministry of Agriculture, Fisheries and Food. *Manual of nutrition*. London, HMSO, 1976. Obtainable from Her Majesty's Stationery Office, P.O. Box 569, London SE1 9NH, England.
2. Great Britain. Royal Society. *Report of the sub-committee on metrication of the British National Committee for Nutritional Sciences*. Obtainable from the Executive Secretary, The Royal Society, 6 Carlton House Terrace, ▲ London SW1Y 5AG, England.

THE APPLICATION OF MAGIC AS AN  
AUDIO-VISUAL AID IN NUTRITION EDUCATION*by**W. Van Dokkum\**

In any form of education it is of primary importance that the message from educator to recipient gets across. It is not too difficult to accept that the eventual success is considerably influenced by the way in which the message is presented. For centuries man has emphasized the message by using audio-visual aids, from simple drawings in the sand to more modern techniques

such as video recordings. This does not mean that modern methods of teaching are more successful than the more simple ones.

Audio-visual aids are used in all contexts. The stress, however, is put on *aids*, implying that normally they cannot teach by themselves. Rather, the results of an audio-visual educational programme are limited unless accompanied by some form of verbal communication.



In this article I would like to draw attention to and concentrate on a special type of performance which has never before been touched upon in the literature of nutrition education: *MAGIC*.

---

\*Drs. Van Dokkum is a nutritionist at the Central Institute for Nutrition and Food Research (TNO), P.O. Box 360, 3700 A.J., Zeist, The Netherlands.

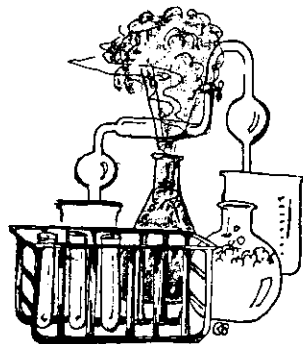
### HOW CAN MAGIC FUNCTION IN NUTRITION EDUCATION PROGRAMMES?

Before going into detail, I would like to mention a few general principles which can be considered essential for nutrition education in the field and are also applicable to magic shows:

- (1) The message should be clear and simple.
- (2) The message must fit in with the pattern of life of the recipient.
- (3) The educator should be sympathetic and have a pleasant personality.
- (4) The educator should not assume the role of "showing off" his capabilities.
- (5) Locally available materials and known circumstances must be applied.

It is also necessary that the programme include several "high-lights" that are easily remembered. We all remember the dramatic demonstrations during our chemistry classes such as (mild) explosions, interesting colour-changes of solutions, light effects, etc. In magic performances the equivalent of these are sudden appearances or disappearances, colour-changes, transformations of objects, etc.

As a magician I see, therefore, enormous possibilities in the use of magic performances, for children, adults and the elderly, in fact for almost all age groups. As the message should not be construed as belonging only to the educator, it is essential that there be some form of audience participation during the show. This means that magic performances on television can be of limited value unless repeated many times.



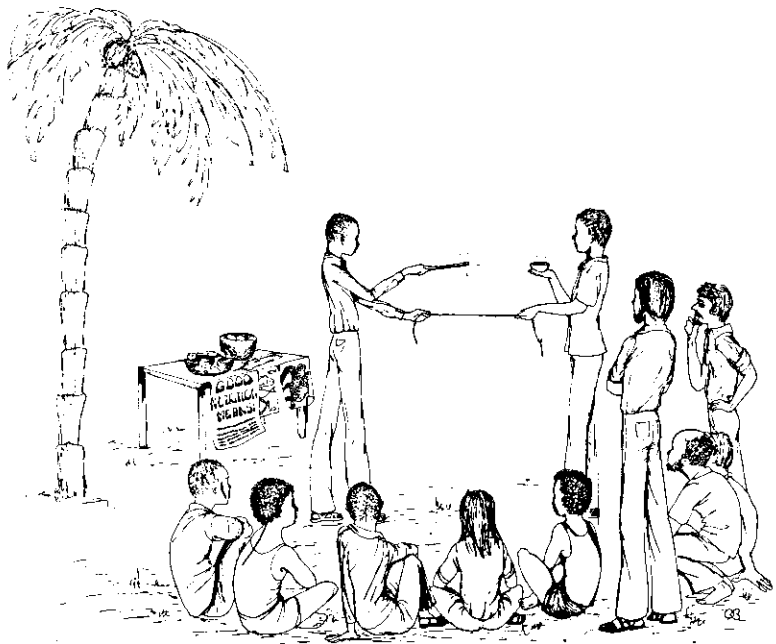
We can distinguish three main ways in which magic can function in nutrition education campaigns:

- A. *Magic simply for attracting attention* without a specific message being conveyed. Almost any kind of magic performance can be successfully carried out by this means, provided it is applied to a specific age group, for example, tricks for schoolchildren.

Experience has, however, shown that magic is very well received by almost all age groups. Thus, when a magic show is announced as part of a nutrition education programme, the audience's interest attention and participation will generally be increased.

- B. *Magic with a nutrition message*: This is far more important. Let me illustrate with an example, the 'rope trick'.

Someone from the audience cuts a rope into two pieces. After the application of a magic formula, repeated by one of my assistants from the audience, the rope is again restored to one piece. When I perform this trick, magic might be combined with nutrition in the following way: We show the audience two drinks, one highly nutritive, the other with a much lower nutritive value. First, the educator and his assistant from the audience consume the low nutritive drink and, as the rope is not repaired, it is obvious that the magic formula has no success. Then the high nutritive drink (which makes you strong and intelligent) is consumed and with no doubt the assistant (with the "magic wand" in his or her hand) will succeed in repairing the rope!

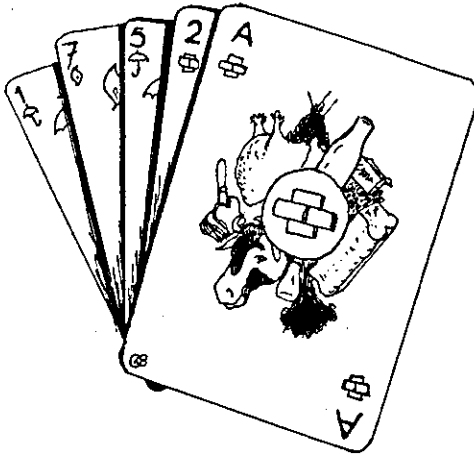


Many tricks can be performed either to compare "good and bad" or to demonstrate the importance of a particular food. What is essential is that the equipment and the story-line need to be translated into nutritional terms and applied to local circumstances.

- C. *Magic with playing cards*: Another example is based on playing card tricks which are regular features of the magician's performance. I do not know whether somewhere in the world specific "nutrition playing cards" exist\* but with a translation of the cards into nutritional terms a direct application to nutrition can be made.

---

\*Editor's Note: Nutrition playing cards have been successfully developed by several nutrition institutions. An example is the "Yummy Rummy Game" produced by the American School Food Service Association in 1970.



"Heart Cards" could become "body building cards". Blue (not black) cards could indicate, either foods of insufficient nutritional quality, or unhygienic conditions with the red cards representing the opposite. The composition of nutrition cards, will of course, depend on the local circumstances and, therefore, vary from country to country, e.g. Latin America as compared to Africa.

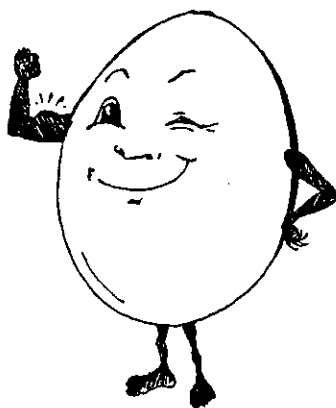
Hence a number of magic tricks can be re-programmed in such a way that a nutrition message forms part of the show.

- D. *Combatting taboos with magic?* I am well aware that this application of magic will be quite questionable. Without going into details about food taboos - there is extensive literature on the subject - and without being able to give examples of results obtained in this way, I nevertheless believe that magic is applicable in this context. We all know how difficult it is to change food habits, particularly when certain taboos form the basis of food choices



and hygienic practice. In almost all cases many years of careful planning, educating, advising, etc. are needed for a change from bad to good (that is, what *we* consider good or bad!).

In what ways might magic be applied? In an area where it is traditionally "forbidden" to consume eggs, an example could be a special magic show which demonstrates the importance of eggs.



This sudden and striking confrontation with the advantages of consuming eggs might influence the population group and might finally succeed in a re-consideration of the taboo by those involved.

It would be most interesting to have comments from nutrition educators on this quite provocative aspect of the application of magic.

#### *CAN ANY NUTRITION EDUCATOR BECOME A NUTRITION MAGICIAN?*

To answer this question we should realize that whenever audio-visual aids are applied it is essential that the nutrition educator has the skill to make use of the aid he or she selects. This holds true for posters, flannelgraphs, puppet plays, etc., and, of course, for magic as well. I am convinced that, where the

expertise exists to enact "drama" such as puppet plays, then a magic show can be performed without many problems.

I know that this might sound a little bit too easy for those educators who never have tackled a "magic wand" and who are always amazed when seeing a magician performing his tricks on T.V. or in a theatre. There is, of course, a secret behind every trick, but in many cases the techniques involved in performing the trick are not more difficult than, say, manipulating puppets during a puppet play.

So, provided the educator is skillful with those aids that require some "handling", then the answer to the question "can any nutrition educator become a magician?" is that many nutrition educators can make use of magic as a visual aid.

#### *SUMMARY AND CONCLUSIONS*

Among the various forms of nutrition education materials and methods, magic can be considered and applied as a visual aid, provided certain general rules, and others more specifically related to magic performances, are taken into account. Not only an "audience attracting aspect" can be attributed to this new visual aid, but also "magic with a message" may be considered a definite possibility in nutrition education programmes. Less certain is the role magic might play in combatting food taboos. Finally, some skill is required for performing magic tricks, but generally this is not more difficult than other performances involving drama.

This article only touches on the possibilities. As yet specific examples of "nutrition tricks" do not exist in a form suitable for nutrition education programmes. It is, therefore, not possible to give a list of addresses where "nutrition magic" (not to be confused with magic nutrition!) can be obtained. Comments, however, would be very welcome. ▲

## MEDICAL EXAMINATION OF FOOD HANDLERS\*

### *CURRENT PRACTICES*

Many countries of the Caribbean require food handlers to be examined on at least an annual basis before a licence, either to the individual and in some countries, the food establishment, can be issued. There are wide variations in the requirements, even between counties and boroughs within the same country; some authorities accepting the certification of any registered medical practitioner, others requiring examination by government medical officers.

Seldom has any evaluation of the examination been made. The Designated Epidemiologists from the Caribbean meeting at CAREC in May 1977 recommended that CAREC publish a review of the medical examination of food handlers.

There is common agreement that the purpose of the examination is to detect those diseases which may be transmitted by food. However, in many countries a VDRL\*\* forms an important and time-consuming and not inexpensive part of the routine examination. All would agree that syphilis is not transmitted by food but there is less universal agreement that the VDRL should be dropped since it may form part of a wider serological screening programme. It is not within the scope of this article to review the merits of such mass screening programmes but the point must be made that passing or failing a food handler on the finding of a negative or

---

*\*This paper was originally produced by the Caribbean Epidemiology Centre (CAREC) as their Surveillance Report, Vol. 3, No. 9 (September 1977). Readers requiring further information are invited to write directly to the Editor, CAREC Surveillance Report, P.O. Box 164, Port-of-Spain, Trinidad.*

*\*\*Editor's Note: VDRL - refers to a test performed in a Venereal Disease Research Laboratory.*

positive VDRL is not a rational exercise. The recommendation is that either the VDRL test should be deleted or if continued, any positive finding followed up for syphilis or yaws without delaying the licensing procedure.

Chest X-rays are an annual requirement in many countries. Apart from the matter of repeated exposure to radiation, this is an expensive technique, time-consuming for both the food trade and the health authorities. Although it is not possible to generalize, each national authority or local government body which requires annual chest X-rays should carry out a simple evaluation over the past five years. How many X-rays had to be taken at what cost to find one case of tuberculosis? Then questions should be asked - are there simpler, less expensive, more efficient ways in respect of national resources to achieve the same or better detection?

Single stools are examined as a screening process for food handlers and since effective typhoid registers are rarely kept, this single mass approach is the norm rather than selective repeated stool examinations of high risk suspect carriers of typhoid etc. In Trinidad and Tobago where there has been some evaluation of stool examination of food handlers, it has been estimated recently to cost TT\$10,000 to pick up one typhoid carrier. Since stools are collected at home under obvious privacy, the opportunities for substitute stools or splitting the specimen among more than one food handler are further constraints. In several instances laboratories in the best traditions of proficiency testing examined the stool under several names. These stool examination marathons can dampen the enthusiasm of the most steadfast technicians and severely encroach on the capacity of a laboratory to undertake other public health work.

National and local Authorities require the medical examination to be carried out by a registered practitioner. Unfortunately the focus may be then on certification rather than on examination. General medical education rarely includes enough background

information for the medical practitioner to take the opportunity of the examination to impart on a person-to-person basis advice on food handling practices - nor indeed do busy physicians have the time. This is quite a different subject to a general discourse on personal hygiene and requires insight into trade practices of a wide variety of food handlers, from street vendors to the staff of



*One way of controlling food-borne microbiological hazards is to educate street vendors on the need for hygienic practices when handling food and necessary precautions to be taken.*

the largest luxury hotels, restaurants and local processing plants. What medical conditions can a medical practitioner discover clinically which would prove a hazard to the consumer? The observation of skin disease, inflamed throat, pyrexia and chest signs suggestive of lung infection and a history alerting the physician to exclude the carrier state. The medical practitioner must have access to laboratory and radiography facilities to go further. It is important to recognise just what a competent clinical examination of a food handler can achieve and then consider whether a trained public health nurse with her post-basic

training in health education techniques could not achieve the same results or better if she had insight into the food handling practices of the country.

The most important single defect of the present arrangements for the examination of food handlers is the false sense of security imparted to health authorities, the public and the food trade. However detailed the examination, the net result is only an assessment that the individual is fit or not fit to handle food on that particular day. Most years there are 364 days for which the examination is not current and any annual examination process must ensure that the food handler can function as his or her own examiner for the rest of the year. In Barbados, under the Health Services (Food Hygiene) Regulations, 1969, this individual responsibility is defined as "any person engaged in the handling of food becomes aware that he is suffering from any fever, vomiting, diarrhoea, dysentery or other bowel disease, jaundice, persistent cough, any skin disease or any infection likely to cause food poisoning, he shall forthwith give notice of the fact (a) to the occupier of the food premises or (b) to the owner of the business, if he is engaged in the handling of food otherwise than at or from food premises". Under another section of the Regulations, the owner/occupier given this information "must cause this person to cease work forthwith". It is suggested that reinforcing this recognition of dual responsibility of worker and employer, or single responsibility for those self-employed, should be a key objective of any "examination" of food handlers.

#### *SUGGESTED APPROACH*

It is suggested that consideration be given to a new approach to the medical examination which would have the following main features:

1. All examinations should be undertaken by government personnel only, mainly utilizing public health nurses with medical officers examining referred persons only.
2. A baseline examination should be undertaken of each new food handler. This should include a careful history, a review of typhoid and tuberculosis registers, possibly a chest X-ray but this would depend strictly on a local evaluation of the effectiveness of chest X-rays as a detection tool and local capacity to undertake routinely for all new food handlers. Similarly with stool examination where there is no history suggestive of a possible carrier state, it becomes a question of whether the laboratory has the capacity to undertake three consecutive stools on all new food handlers or whether scarce resources should be focused on suspect cases for more detailed assessment. Factors such as the amount of typhoid experienced in the past in the country have to be taken into account in assessing the most appropriate action. A single negative specimen fails to exclude a carrier although the single stool may be useful in detecting parasites.
3. The annual examination should again be undertaken by nurses - history up-date, general appearance, skin, throat examination, review of first examination record card, typhoid and tuberculosis registers.
4. At both the first baseline examinations and the annual re-examinations, education can be given to groups of food handlers by nurses and public health inspectors on food handling practices and being the their own health examiner. In cooperation with the

public health inspectorate, the health education units could develop standard packages of training materials, including visual aids and hand-outs to reinforce the discussion. As with all health education activities, this needs critical evaluation and dynamic adjustment to ensure effectiveness of communication as food handling practices change.



*Knowledge of the food handling practices of a wide variety of persons, such as staff in restaurants and other food catering establishments, will help educators to give more effective information and advice.*

CARIBBEAN FOOD & NUTRITION  
INSTITUTE  
LIBRARY



5. Annual examinations could be arranged at times convenient to the trade, e.g. early closing days or on the premises of larger operations since if these concepts are accepted, one is dealing with groups for education and conducting a rapid screening procedure. Management should be given more in-depth education as necessary to continue the education process the rest of the year.
6. All outbreaks of food-borne illness should be investigated and if the disease has been transmitted by a food handler, the previous examination of that individual should be critically reviewed. This is just as necessary even if the present examination procedures continue.
7. If there are suitable local facilities, consideration should be given to requiring all licences to have a photograph of the licensee attached. A copy of this photograph should be attached to the record card to deter impersonators.

*Editor's Note: The above article is written to stimulate discussion and criticism. It does not necessarily represent the stated policy of PAHO.*

▲

#### CAJANAQUOTE

*"...It shall be eaten the same day we offer it, and on the morrow: and if aught remain until the third day, it shall be burnt with fire. And if it be eaten at all on the third day, it is an abomination; it shall not be accepted..."*

- Leviticus 19:6

## NEWSPAPER CLIPPINGS

### MILK COMPANY'S SERVICE DISCONTINUED

*From The Jamaica Daily News, 4 January 1978*

Mead Johnson (Jamaica) Limited has shelved its home nursing service which involved the promotion of infant food formulas and advice on baby care. The 17 nurses who were involved have been re-channelled into other areas of service within the company, or have left to seek other employment.

The General Manager of Mead Johnson said that the service was shelved because of feelings within the Ministry of Health that it was in conflict with the aims of the Ministry's Nutrition Education/Communication programme, launched in October 1977.

"We have sensed a misunderstanding of our role, and gathered that it was thought that we were encouraging mothers to use formulas rather than breast feed," he said. He felt that this was a grave misunderstanding because the home nursing service gave advice to mothers on total baby care.

He reported that the programme, which had been in operation for 16 years, had been most effective with mothers who were having babies for the first time. Mead Johnson had been the only local supplier of infant baby formula over the past year. The service was discontinued after consultations with the Ministry of Health which felt that mothers were being ill-advised to use infant formula in preference to breast feeding.

The General Manager said that only one nurse had been retained with the Company to give advice to mothers who sought it, but that the home nursing service had been definitely shelved.

He also indicated that since the suspension of the service several mothers had called in expressing disappointment over this development.

▲

## EFFICIENCY NEEDED IN PIG INDUSTRY

*From (Barbados) Sunday Advocate News (Editorial), 5 March 1978*

Barbados pig farmers have been urging that the Government consider setting up a pork processing plant, or alternatively become actively involved in the sole local processing plant - now privately owned - Barbados Packers and Cannery Limited (BAPAC).

Pig farming in Barbados has only comparatively recently developed into anything more than a peasant undertaking where kitchen swill and a little animal feed was fed to a hog or two and the porker sold to a "speculator" or "engaged" to the backyard. Even on this basis, pig farming meant the difference between making ends meet and financial distress to many Barbadian families.

So much so that the Government arranged subsidies in terms of improved stock, and feed at reduced prices and as outright gifts in some circumstances. Research and extension services to combat disease and mismanagement were instituted and the lot of pig farmers improved, but never moved far from the precarious, for the very valid and simple reason that there was no assured market for the animals nor any real control of the quality of the stock reared.

Added to this was the real problem that such a pattern of activity was the simple one of the primary producer with all the handicaps and uncertainties of a fluctuating market.

The big money could be made in processing. Guaranteed markets would encourage the farmers to develop and be more efficient in the pork industry. Processing would keep valuable currency at home, cutting down on the import bill.

But this has not been the case, although private individuals have set up a pork processing plant in Barbados and arranged contracts with pig farmers. Since the BAPAC operation began there have been difficulties. One of the major difficulties encountered by pig farmers is the high cost of feed. Efforts to develop a food plant in Barbados have borne fruit, but experiments to substitute

locally grown ingredients for expensive imported components have not been fully successful.



*Pigs and humans compete directly in their search for food resources. They eat roughly the same food - although their table manners are different!*

The pig farmers have asked that the Government halt imports of pork products into Barbados and guarantee BARPAC a market for its products. While it is acceptable that an industry should be protected in its formative years, it is an economically unsound policy to protect it always. Eventually only the tests of efficiency and quality should be allowed to determine whether a product of industry sinks or swims.

However, the record of other countries suggests that pig farming and pork processing can be made to pay both primary producers and processors. Barbados just needs to find the efficiency that will make its pork industry go.

*Editor's Note: Nutritional considerations are not mentioned in this article. It is thus only reasonable to point out that processing is bound to raise the price. The article states that "the big money could be made in processing". Who would make the money - the farmer or the processor? Where would the money come from - the consumer?*

▲

## NUTRITIONIST FOR CARICOM HEALTH SECTION

*From The Jamaica Daily News, 18 March 1978*

Dr. Philip Boyd, Health Chief of the CARICOM Secretariat, has said that a nutritionist will soon be attached to the CARICOM secretariat's health section.

The main job of the nutritionist will be to design a project aimed at stimulating the use and preparation of Caribbean foods for children 5 months - 2 years. This is the most nutritionally vulnerable age group in the Caribbean.

He added that his section was also studying the feasibility of producing a weaning food for babies and that the secretariat was anxious to bring together the experience of Guyana, Jamaica and Trinidad and Tobago on this subject.

"The whole question of the health of the Caribbean mothers and children is one of six priority areas which are receiving the attention of CARICOM Governments", he said.

Other priorities included strengthening health management and providing imaginative, creative and innovative leadership. ▲

## EAT RIGHT

*From The Jamaica Daily News (Editorial), 7 April 1978*

The current "eat right" campaign being promoted by the Health Ministry's Nutrition Education Programme is one which deserves the full support of the nation.

Our country has already seen too much of the results of mal-nutrition and undernutrition, particularly in the young. Thousands of children have had their physical and mental development stunted because of poor feeding habits.

We believe, however, that as part of the Programme to have the nation fed properly, and in the right quantities, the frequent shortages of basic food items has to be addressed. These shortages have been the result of several and varying factors - some local and within our control, others foreign and over which we have no power.

We are convinced also, that the Programme has to be backed by as adequate a supply of local foods as is possible. While there are people in the country who are either starving or near to starving, administrative hitches have led to food being spoilt and dumped.

There is also the problem of the poorer people of Jamaica being unable to afford some items of food which are important to a proper diet, but which are out of their reach because of the price.

Despite these drawbacks, however, we believe that the present Programme is valuable as part of a necessary public education programme. ▲

#### DOMINICA MOVES TO BOOST AGRICULTURAL PRODUCTION *From (Barbados) Advocate News, 14 March 1978*

Dominica will shortly publish a five-year agricultural development plan aimed at bolstering agricultural production, improving marketing and developing processing.

The plan, covering 1977-81, has already been approved by Cabinet.

It has identified three areas for priority: agriculture-based industries, import substitution and dietary improvement.

Strategies include providing a stable market with guaranteed minimum prices for specific crops, as well as the creation of a market intelligence section in the Ministry of Agriculture to help identify markets for Dominican exports.

Tax and land reform to encourage full use of arable land are also proposed as is the improvement of credit facilities.

The plan urges, too, streamlining credit policies so they conform with other Government policies.

The plan was prepared by a Jamaican agricultural economist and is billed to a step towards making Dominica the food basket of the Caribbean, and ensuring its contribution to the Regional Food Plan.

It identifies poor marketing and inadequate communication as major constraints to agricultural development on the island.

The lack of adequate finance and the existing land tenure system are also indicated as factors holding back agricultural development in an island rich in forest and agricultural potential.

The land tenure system was especially criticized because it was pointed out that occupants avoided planting through fear of losing their developed areas to others.

In addition, it is impossible to secure finance merely through possession of land - termed "landed security" here - thus making it impossible to obtain financing under present conditions.

The common ownership system practised in Carib\* reserves here is identical as a special case and the plan suggests that the Caribs be encouraged to devise some proper system of land distribution for the cultivation of various crops.

---

\*Editor's Note: Caribs - indigenous inhabitants of which 1,000 - 1,200 remain, the majority occupying a government reservation at Salybia called the Carib Reserve in the middle of the east coast.

The plan notes that equitable land distribution, together with proper utilization is essential to the development of agriculture and a stable economy.

It warns that with the population increasing and unemployment rising, a proper land distribution system must be introduced urgently to avoid catastrophe.

Once implemented, the plan will allow Government to introduce its land policy along a two-pronged approach. The long-term plan calls for introduction of controlled freehold ownership and the short-term involves leasing properties from individuals for five years and releasing them to farmers. ▲

CAJANAQUOTE

*"Cholesterol is poisonous  
So never, never eat it.  
Sugar too, may murder you  
There is no way to beat it.  
And fatty food may do you in  
Be certain to avoid it.  
Some food was rich in vitamins  
But processing destroyed it.  
So let your life be ordered  
By each documented fact  
And die of malnutrition  
But with arteries intact."*

- D. Kritchevsky  
New Eng. J. of Med. 1960



## NEWS BRIEFS

### GRANT WILL STRENGTHEN CFNI COOPERATION WITH GOVERNMENTS

A grant of more than \$1 million for nutrition training, food and nutrition planning, and production of educational materials has been awarded to CFNI by the Government of the United States through its Agency for International Development (USAID).

The funds will strengthen the Institute's multi-disciplinary work with the governments of 15 English-speaking Caribbean countries and Suriname. The project emphases are already important parts of the CFNI programme of work, the goal of which is the improvement of the food and nutrition situation in its member countries as part of their total development.

The three-year project will enhance the Institute's work with governments in establishing, implementing and evaluating multi-sectorial food and nutrition policies and plans. Improved utilization of available food supplies and the reduction of malnutrition are the anticipated results. The funding will also permit CFNI to expand its production and dissemination of educational materials including audio-visual media.

In addition to the US\$1,102,200 grant from USAID the three-year project will utilize \$146,000 from the Pan American Health Organization (PAHO) which administers the operations of the Institute, and \$42,000 from the United Nations Children's Fund (UNICEF) and the Ford Foundation which are contributing bodies to the Institute.

Signatories to the grant agreement which was ratified in Bridgetown, Barbados on 1 June 1978 were Dr. J. Michael Gurney, Director, CFNI; Dr. Charles Williams, Deputy Director of the Pan American Health Organization and officials from the USAID Caribbean Regional Office.

▲

TECHNICAL GROUP MEETING ON CARIBBEAN FOOD AND  
NUTRITION COUNCILS HELD IN GRENADA 5-9 JUNE 1978

CFNI convened a Technical Group Meeting from 5-9 June 1978 to review the structure, powers and functions of National Food and Nutrition Councils in the CARICOM Region. A group of more than thirty participants represented the several member countries of CFNI and came from varied disciplines, positions and agencies of Government. The result of this Meeting was the drafting of Guidelines for the Development of Food and Nutrition Councils in the Caribbean. These Guidelines, currently being distributed through Governments of the member countries, will assist in the design, restructuring and/or development of the most suitable organizational structure for a body established to formulate, implement and coordinate food and nutrition policies and programmes. ▲

CANDI'S SIXTH ANNUAL MEETING  
HELD IN BARBADOS 11-13 JUNE

Caribbean nutritionists and dietitians explored the theme: "Nutrition in the Caribbean, Challenges, Priorities and Guidelines for Future Action" during their Association's sixth annual meeting held in Barbados, 11-13 June 1978.

The programme dealt with the role of dietitians in management; nutrition education in hospitals, schools and communities; the use of radio and television in nutrition education; CANDI's commitments to the International Year of the Child; and an update on nutrition "happenings" in the Region. Also among the topics covered were the development of national food and nutrition policies and guidelines for food and nutrition councils in the Caribbean; the application of nutrient-cost tables to meal planning; the introduction of "Meal Planning for Diabetics", a new publication for the use of

professionals in treating the thousands of adult diabetics in the Region; and a report on Trinidad and Tobago's successful National Nutrition Week held in early 1978.

Mrs. Loretta Clifton Lopez of Trinidad was elected President and next year's meeting was set for Curacao, Netherlands Antilles.

*Editor's Note: Detailed reports of workshops and highlights of some presentations will be featured in future issues of Cajanus. ▲*

#### JAMAICA NUTRITION SURVEY, 1978

In April 1978 a Nutrition Survey of Jamaica was carried out by CFNI in collaboration with the Nutrition Department of the Ministry of Health and Environmental Control. A sample size of 3,000 pre-school children and approximately 600 to 700 pregnant and lactating women was decided upon. The sample was drawn by stratified random selection of 200 enumeration districts and the systematic sampling of each of these districts to obtain 15 preschool children in each district. Pregnant and lactating women present in the houses visited were included in the Survey. The data gathered were intended to determine height, weight and arm circumference for all children and haemoglobin levels for every third child. For pregnant and lactating women, height, weight, arm circumference, triceps skinfold and haemoglobin levels were determined. Mothers were also questioned as to whether their children had received routine DPT\* and Polio immunization. At the time of the Survey also, there were reported epidemics of gastroenteritis and measles, so further questions were added to the Survey to rule out the

---

\*Editor's Note: DPT - Diphtheria, Pertussis (Whooping cough) and Tetanus (Triple vaccine).

possibility of misleadingly low weights being due to these causes. Data from the Survey has now been processed and preliminary results presented to the Ministry's Primary Health Care Team. ▲

#### CARIBBEAN REPRESENTED AT INTERNATIONAL SEMINAR

Two CFNI staff members, Dr. Curtis McIntosh, Food Economist (Research) and Mr. Kenneth Leslie, Agricultural Economist attended a workshop on "The impact of food price policies on nutrition" in Mexico City from 21-25 March 1978.

Sponsored by the United Nations University World Hunger Program, the workshop involved leading international experts in food and nutrition planning from Latin America and the Caribbean.

Dr. McIntosh presented a paper on "Food price and subsidy policies and nutrition: experiences from Trinidad and Tobago". It showed that price control levels for some basic foodstuffs caused low and sometimes negative net returns for sellers, with consequently unfavourable results on nutritional status.

Mr. Vernon Allen of the Food Intelligence Division of the Ministry of Industry and Commerce, Jamaica, was also present at the workshop. His paper was entitled "Problems in implementing programmes to control or stabilize staple food prices in Jamaica".

The workshop ended on a hopeful note for confirmed collaboration in the war against hunger. ▲

## CFNI STAFF MEMBERS VISIT INCAP

Dr. J. Michael Gurney, Director of CFNI, and Miss Manuelita Zephirin, Public Health Nutritionist/Dietitian, visited Guatemala, Central America, from 8-12 May 1978 as guests of the Instituto de Nutrición de Centro América y Panamá (INCAP). During the visit they observed work in progress on anaemia surveillance, dietary services and food and nutrition planning among other projects. The opportunity to exchange ideas and experiences with a "sister" institute was very useful. ▲

## NEW APPOINTMENT TO CFNI STAFF

In April 1978 CFNI welcomed Mrs. Joan Peters who joined the staff as Nutrition Educator, at the Jamaica Centre. As a Nutritionist and Home Economist, Mrs. Peters will be chiefly responsible for promoting nutrition education in schools and teacher training colleges in CFNI member countries. She will also cooperate with governments in the development of nutrition education curricula and will be involved in the production of nutrition education materials and in the establishment of training programmes.

A Canadian, Mrs. Peters was educated at Acadia University in Nova Scotia and the Pennsylvania State University. As an Extension Specialist at the University of New Hampshire in Durham she was engaged in consumer and nutrition education and in extension training activities. She also studied nutrition and community development at Queen Elizabeth College, London, England, and was a UNESCO Consultant at the Central Luzon State University, Nueva Ecija, Philippines.

*Cajanus* extends a warm welcome to Mrs. Peters and wishes her every success and happiness in her appointment. ▲

## BARBADOS TO ESTABLISH NATIONAL HEALTH SERVICE

A technical cooperation grant to help Barbados develop a national health service programme has been approved by the Inter-American Development Bank (IADB). The technical cooperation will enable Barbados to carry out a study in order to decide on the means whereby a national health service may be developed. The Government is committed to the establishment of a national health service which would give most Barbadians easy access to health services of their choice through private practitioners, health clinics or institutional care. Primary health care would be decentralized away from the nation's principal hospital and brought closer to the patient through increasing access to private practitioners and paramedicals working in polyclinics.

The grant will also enable the nation to study a national drug plan, including the preparation of a pharmaceutical formulary based on generic instead of brand names. ▲

## FEEDING BOTTLES BANNED

In February 1977 the Parliament of Papua New Guinea passed legislation banning the free sale of baby feeding bottles and teats. In future these items will be available only on prescription. A mother has to demonstrate that (a) she has the knowledge and facilities to prepare a hygienic feed of the requisite strength for her baby; and (b) she has an adequate income to be able to purchase the necessary amount of milk formula on a regular basis, in addition to meeting the other needs of the family. Research carried out in Port Moresby, the capital, has revealed that the incidence of clinical levels of malnutrition is up to seven times as high among bottle fed infants as their breast fed counterparts.▲

## VISIT TO CFNI OF DR. De CAIRES

Dr. De Caires from PAHO Headquarters visited CFNI (Jamaica Centre) on 3 August 1978. He is a member of the team which is reviewing the work of PAHO Centers prior to the next PAHO Executive Council Meeting at which the Institute's performance will be assessed. During the visit Dr. De Caires was taken on a brief tour of the building and met with members of CFNI staff who presented accounts of programme activities. ▲

## RENOWNED PAEDIATRICIAN DIES

Professor emeritus Bo Vahlquist, of the Department of Paediatrics, University Hospital, in Uppsala, Sweden, died on 31 March 1978.

Dr. Vahlquist was editor of "Nutrition: a priority in African development" (1972) and has written numerous books and papers on the subject of child health. His tireless and devoted efforts for the benefit of the children of the world will always be remembered. ▲

## CAJANAQUOTE

*"...the logical conclusion of self-sacrifice is that the individual sacrifices himself for the community, the community sacrifices itself for the district, the district for the province, the province for the nation, and the nation for the world."*

- Mahatma Ghandi  
(1869-1948)

## BOOK REVIEWS

## EDUCATIONAL HANDBOOK FOR HEALTH PERSONNEL

*Guilbert, J.J. Geneva, World Health Organization, 1977 (WHO Offset Publication No. 35: ISBN 92 4 170035 1). Sw. fr. 28, US\$11.20. Also published in French.*

The WHO educational handbook for health personnel (previously issued as a document HMD/76.1) is the outcome of many years' experience and experiment (in several WHO regions) in developing a theoretical and practical basis for providing effective education in the health sciences and for training competent and self-reliant health professionals, particularly in the developing countries. Essentially, a systematic approach to educational development is advocated for both teachers and students: to establish learning objectives relevant to health needs, to provide the most appropriate learning situation using a wide variety of teaching techniques, to break down the old distinction between teaching and learning (by motivating students to actively acquire knowledge, achieve skills, and develop correct attitudes), and to help students to understand, synthesize, and evaluate information and to assess their own educational achievements and those of others. A further requirement of this approach insists on the evaluation of the relevance of the teaching/learning process to the students' needs and on the devising of testing/examination techniques, which distinguish unambiguously between competent and incompetent candidates and which are reliable and, above all, relevant to the objectives of the educational system, which must itself respond to the health needs of the population.

One chapter gives a step-by-step account of how to organize a short educational workshop, which the author defines as "a meeting during which experienced people in responsible positions come together with experts and consultants to find solutions to problems that have cropped up in the course of their work and which they have had difficulty in dealing with on their own. Participants themselves select the objectives they wish to reach and help in



choosing the problems for group work". The author strongly emphasizes that "an essential feature of the workshop is complete active involvement by each participant: the whole point of attendance is to work and learn from practical experience". However, these guidelines are mostly valid for longer workshops also and, incidentally, much of the advice given here could be adapted to workshops dealing with other problems.

The chapter on how to organize a short educational workshop offers detailed and practical help in planning and arranging a workshop: starting at least six months in advance, potential organizers are advised about determining the size of the group, estimating the cost and having the budget approved, selecting a date and place for the workshop, inviting the participants, setting up a committee of sponsors, and, if necessary (depending upon the number of participants), appointing assistant organizers. Working methods for the workshop (including the roles of organizers and participants), timetables for the various activities, and programme preparation are fully explained, and finally a questionnaire is presented for evaluation of the workshop by the participants before they disperse to their various schools and universities.

The problems discussed in this publication are concerned specifically with the education of health personnel, i.e. training of physicians, nurses, dentists, medical assistants, sanitary engineers, etc.

(Abridged) From Health and Biomedical  
Information Programme, WHO (Geneva)▲

CAJANAQUOTE

*"Tell me what you eat, and I will tell you who you are."*

- Brillat Savarin  
(1755-1826)