

# CAJANUS

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Caribbean Food & Nutrition Institute

## INDEX VOLUME 8 1975

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As a courtesy to our readers, we have with the first issue for each year, sent out a complete listing of articles and features which have appeared in 'Cajanus' during the previous year. However, with the completion of Volume 8, 1975, we are introducing two alphabetical indexes - a Subject Index and an Author/Title Index which we hope you will find helpful in locating more easily topics of particular interest.

We will welcome any comments on these indexes.

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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, namely PAHO/WHO, FAO, UNICEF, the University of the West Indies, and the Governments of the Commonwealth Caribbean countries, nor of the Williams-Waterman Fund or the Ford Foundation.

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# EDITORIAL

## YEAST TO THE DOUGH

*We hope readers will like the new look of 'Cajanus'. This is made possible by grants from UNICEF (the United Nations Children's Fund) and the Research Corporation of New York for a printing unit at CFNI. This issue of 'Cajanus' is the first major production of the unit.*

*On page 55 you will find a report on the readers evaluation of 'Cajanus' held one year ago. We are grateful to those readers who assisted in the development of 'Cajanus' by replying to our evaluation questionnaire.*

*The major feature of this issue is our special section on staple foods for the Caribbean. We attach great importance to this subject which concerns plant breeders, agronomists, farmers, those concerned with marketing, food processors and nutritionists. If we are to make a useful reduction in our import dependence all these skills will have to work together in the interest, not of special sectors of the community, but of "all" consumers.*

# STAPLE FOODS FOR THE CARIBBEAN

## I. NUTRITIONAL CONSIDERATIONS

By J. M. Gurney

Much of this issue of 'Cajanus' is given over to the debate on suitable staple foods for the Caribbean. The timing is appropriate in view of the Tenth West Indies Agricultural Economics Conference, to be held in April. The theme of this conference is "Maximizing Regional Self-sufficiency in Food in the Commonwealth Caribbean".

The debate was opened in 'Cajanus' by an article entitled "Nutrition Facts on Staples" (Volume 6 (1973) No. 4, page 213). The following major points were made:

*The nature of the staple largely influences the nutrition of the household.*

*Pound for pound cereals (wheat, rice, corn, etc.) contain more energy and protein than do fresh roots and tubers (yam, potato, etc.) or starchy fruits (bananas, breadfruits, etc.). Flours made from roots, tubers or starchy fruits approach the energy value of cereals but may fall short in protein.*

*The cereals are extremely important sources of protein and energy in the Caribbean. Wheat flour is outstanding in this respect.*

*Composite flours must at least equal the nutritional qualities of what they replace without costing the consumer more.*

*Any flour that replaces wheat must be widely accepted by the people, whose nutritional state currently depends heavily on wheat flour.*

Following further work an enriched, or perhaps refined, paper is in press (*Ecology of Food and Nutrition*, 1975, 4, 1-5). Information on local yields and on retail cost nutrient values, as provided in this latter paper, is presented below, and on page 4.

In this Issue are two articles especially written for 'Cajanus': the first is by Dr. George Sammy of the University of the West Indies; it is entitled "The Time to Replace Wheat by an Indigenous Carbohydrate is Now". The second paper, "Composite Flours", is by M. Narayana Rao and R.P. Chatelanat of the Food and Agriculture Organization of the United Nations (FAO).

Contributions to this debate from readers will be welcome.

Table 1: Yields per acre per year in tons in total energy and in protein of various crops and rotations, using Jamaican data.

Crop	Yield (tons)	Energy yield (Kcal X 10 <sup>6</sup> )	Protein yield (metric tons)	% of energy yield from protein
Red pea )	0.4	1.2	0.08	
Corn )	1.5	5.0	0.13	
Soyabean )	0.8	<u>2.3</u>	<u>0.26</u>	
		8.5	0.47	22.1
Corn )	1.5	5.0	0.13	
Cowpeas )	0.5	<u>1.5</u>	<u>0.11</u>	
		6.5	0.24	14.7
Corn )	1.5	5.0	0.13	
Peanuts )		<u>2.0</u>	<u>0.10</u>	
		7.0	0.23	13.1
Rice	2.4	7.8	0.16	8.0
Yam	6.0	4.9	0.11	9.1
Sweet potato	4.0	3.5	0.04	4.5
Banana	5.3	2.7	0.03	4.7

Table 2: Ranking of retail prices of various staples for energy and protein taking cornmeal as 1.0. Jamaican prices in early 1974 used.

Product	Energy cost	Protein cost
Dark sugar	0.9	∞
Cornmeal	1.0	1.0
Refined sugar	1.3	∞
Counter flour	1.5	1.2
Green banana	2.8	4.8
Rice	3.3	3.6
Sweet potato	4.7	9.4
Ripe banana	5.3	9.4
Plantain	6.3	16.9
Yam	7.3	7.0
Irish potato	10.4	9.4

*Note:* Knowing the price per lb. and the nutritional content per lb. as purchased the cost per unit quantity of energy and protein was calculated and related to that of cornmeal.

II. THE TIME TO REPLACE WHEAT BY AN INDIGENOUS  
CARBOHYDRATE IS NOW  
By. G. M. Sammy

Food is one of the basic necessities of life and, as such, no nation should permit itself to become too dependent on others for its basic food supplies.

Wheat flour is a Caribbean staple, but it is a temperate plant and cannot be grown in the tropics. It was introduced here by the Europeans and has become very well established even though it is a foreign food. So well has been its establishment that it has suppressed the development of an indigenous carbohydrate staple. Nevertheless, the time has come when every effort must be made to displace wheat by an indigenous carbohydrate source. However, in doing so, one must take into account the nutritional implications. The problem of displacing wheat is complex and will involve economics, politics and sociology in its solution.

Wheat flour is essentially carbohydrate. It supplies also a large part of the protein requirements of the lower income population of the Caribbean. Dr. Gurney in his article "Nutrition Facts on Staples"<sup>(1)</sup> is concerned about the nutritional value of any substitute for wheat. For whom is his concern - the upper, middle or lower class of society? Both the upper and middle classes can afford adequate quantities of animal protein, and in fact much more carbohydrate than is good for them. It must therefore be the lower class about whom he is concerned. The problem is one of economics - that is, providing them with the means to acquire a sufficient quantity of good, wholesome nutritious food. Importation not only drains the country of its foreign exchange, it also robs the lower income class of employment and thus the means to improve their diet nutritionally.

Before any attempt can be made to replace wheat as a carbohydrate source by a local one, we must answer the following questions:



1. Can we replace wheat as a carbohydrate source by an indigenous one?
2. If the indigenous carbohydrate source is deficient in protein, then can this be fortified?
3. Will the introduction of an indigenous carbohydrate require a change in eating habit and a change in technology of production?
4. Will replacement of wheat mean a more expensive carbohydrate to the lower income class?
5. What will be the economic and social benefits of such a change?
6. To what extent will the Governments of the region commit themselves to such a change?

The change from an imported carbohydrate source (wheat) to an indigenous one is not only possible but also necessary.

I shall now attempt to answer each of the questions posed.

1. *Can we replace wheat as a carbohydrate source by an indigenous one?*

Perhaps not completely at present but quite definitely, we can do it partially. Before complete replacement can be achieved it would be necessary to conduct intensive research in order to select the best source economically and culturally. There is need for research in determining the potentials of maize, sorghum and millet as cereal crops in the Caribbean. There is also need for increased production of rice.

The root crops, yam and sweet potato, are at present being studied under the Root-Crop Programme of the Faculty of Agriculture, University of the West Indies. The Department of Chemical Engineering through its food technology unit has established the use of both sweet potato and yam in composite flours<sup>(2)</sup> for bread and pastry making. Composite flours containing 15% sweet potato flour or 20% yam flour produced bread of high acceptability, using the conventional baking methods. When one considers that the CARIFTA Region spends approximately \$94.8M (E.C.)<sup>(3)</sup> per year on wheat and wheat flour then, if we substitute only 10% of this, we would be saving \$9.48M (E.C.) per year.

What would be the nutritional deficiency of such a composite flour assuming there is no fortification with protein? Wheat flour used in the CARIFTA Region contains approximately 10.6% protein while sweet potato flour contains approximately 4.0% and yam flour 7.0% protein.<sup>(4)</sup> A composite flour containing 90% wheat flour plus 10% sweet potato flour will have an approximate protein content of 9.76%, a loss of 0.84% compared with pure wheat flour. When yam flour instead of sweet potato flour is used the composite flour will have a protein content of 10.42%, a loss of 0.18%. Are these losses really significant? Such a replacement would mean a saving of foreign currency to the tune of \$9.48M (E.C.). Assuming all this money is ploughed back into producing the root-crop flour then it would mean \$9.48M worth of employment and when we consider the multiplier effect this would mean so much more. It would also give rise to a little more purchasing power for the lower-income class, which would hopefully mean a little more nutritious food for them.

2. *If the indigenous carbohydrate source is deficient in protein, then can it be supplemented?*

The answer is *yes*. The addition of soy, peanut, cottonseed and fish flours to composite flour is well established.<sup>(5)</sup> Let us assume we could fortify our composite flour with 5% soya or a legume flour, then this will mean a further savings of foreign exchange to the tune of \$4.74M which can go towards growing and processing the legume. The protein content of this composite flour will now be approximately 11.11% and 10.51% respectively, assuming soya flour to have a protein content of 35% and other legumes 22%.

3. *Will the introduction of an indigenous carbohydrate require a change in our eating habit and our technology of production?*

This will depend on the extent of the replacement. If the replacement is to be partial as in the case of "composite flour" mentioned above, then there will be no change in eating habit or technology. However, the aim should be complete replacement in stages. That is, we may begin with composite flour containing 10% root or tropical grain flour, and going on to a composite flour made solely from tropical grain or root flour plus a legume flour. Replacement of wheat flour greater than 15% to 20% wheat flour will require a change in baking technology and development of a new taste for a different kind of baked goods. The potential for doing this has already been demonstrated by de Reuiter with cassava and soya.<sup>(6,7)</sup> If this is to be achieved then plans must be set in motion now to gradually develop the technology and introduce the new product to the population.

4. *Will replacement of wheat mean a more expensive carbohydrate to the lower income class?*

With the cost of wheat spiralling, and the present shortage of wheat flour, this commodity is already beyond the reach of many people. Some Governments have already started heavy subsidy (1974), e.g. Trinidad and Tobago is subsidising wheat flour to the tune of \$12M for six months. Subsidy of this type helps foreign farmers while our own farmers continue to exist in a state of semi-slavery. The cost of an indigenous carbohydrate source will depend on the mode of production, the economic climate, and the Government's attitude. The cost of an indigenous carbohydrate need not be higher than wheat.

5. *What will be the economic and social benefits of such a change?*

Firstly, such a change will release the Caribbean peoples from their dependence on foreign source for one of their basic staples. Secondly, it will generate badly needed employment. Thirdly, it will usher in a new and hopefully indigenous technology. Fourthly, it will save much needed foreign currency. Fifthly, we can develop a more nutritious staple for our people.

6. *To what extent will the Governments of the region commit themselves to such a change?*

Only the Governments in power can answer this question. Nevertheless, there are strong indications calling for change, such as an increasing population, increasing unemployment, spiralling cost of foods and increasing shortages.

In order to emphasize, I wish to repeat that in the article "Nutrition Facts on Staples" by J.M. Gurney, 'Cajanus' Volume VI, No. 4, 1973, he seemed quite concerned about the adverse

nutritional effect through a change from wheat as a staple in the Caribbean to an indigenous food. On reflection, it would seem that his concern is mainly for the lower income group since it will be this group who can ill-afford its protein and, in some cases, its carbohydrate requirements.

The problem is not merely one of nutrition, it is economic as well as political. If the economic condition of the lower income group is improved then too, their nutrition will improve. At present, the low income group is greatly depressed while the high income group in the society is demanding more and more of the total national income. Preliminary estimates based on the Household Budget Surveys for Trinidad and Tobago conducted in 1971 and 1972 revealed that the bottom 18.6% of all households received a mere 1.4% of the national income, while at the top 13.7% of the households received 47.6% of the national income. With such an income distribution, plus the spiralling cost of wheat with its attendant shortages, even that commodity is now beyond the reach of the low income group. So what do we do now?

There can be no doubt as to the course of action. We must now begin to work on the development of a nutritious, acceptable, and cheap convenience food from our indigenous carbohydrate source to replace wheat, gradually at first, but with the objective of complete replacement. Careful, long-range planning will be necessary if such a replacement is to be achieved. The time to begin is now.

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### III. COMPOSITE FLOURS

*By M. Narayana Rao, and R.P. Chatelanat\**

Nutrition surveys have shown that wheat provides about one-third of the energy and protein in the diets of the people in the Caribbean. Since no wheat is produced in the region its importation presents a serious foreign exchange problem to many countries. Except when gifts of flour are received each country has to pay for the wheat it imports, usually in much needed hard currency. Details of the trade in these commodities are given in Tables 1 and 2. Every dollar spent on importing wheat may mean less foreign exchange available for the purchase of machinery, equipment and other manufactured products so essential for the establishment of new industries.

Within the Caribbean several countries have been investigating the possibility of utilizing flours processed from locally produced crops in order to replace part of the imported wheat used in the baking industry. Recent developments in cereal technology have made it possible to blend wheat flour with appreciable amounts of root and tuber flours, other cereal flours, and protein concentrates processed from oilseeds and legumes. Such blends are widely known as "Composite Flours" and may, under certain conditions, be used satisfactorily in breadmaking, biscuit manufacture and in macaroni-type products.

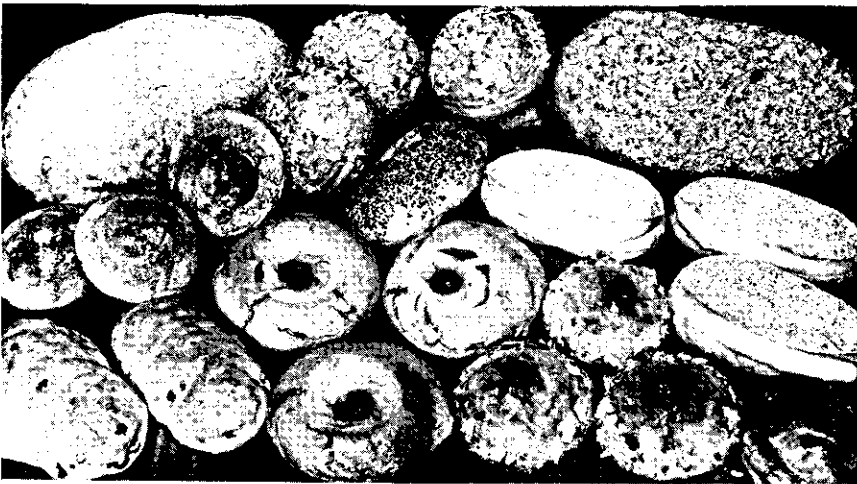
Laboratory experiments have been in progress for the development and utilization of composite flours for breadmaking in various parts of the world during the last forty to fifty years, but it is only in the last ten that research has really been intensified. Baking tests have been carried out with cassava flour in Brazil, Colombia, Cuba, Paraguay, Puerto Rico and several other countries in the Western Hemisphere.

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Assessment of bakery products made with: wheat flour - cassava starch -  
corn starch - soy flour - coconut protein concentrate  
(FAO, Rome)



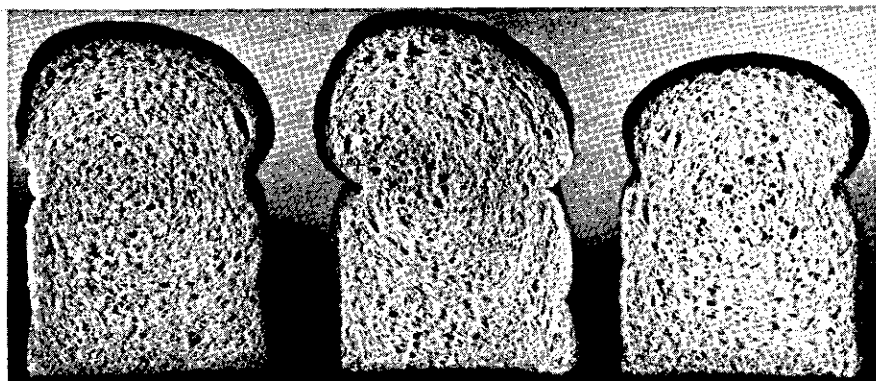
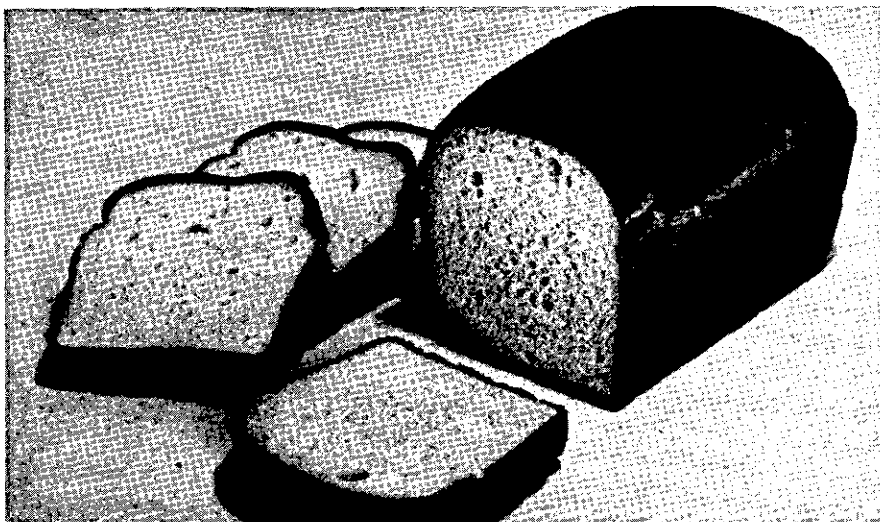
Cassava - soy flours  
(Institute for Cereals Flour and Bread TNO  
Wageningen, the Netherlands)



Trials using sweet potato flour have been reported from Israel, Peru and Trinidad and with *Colocasia* or dasheen flour from India and Hawaii. In the Caribbean some interesting baking tests have been carried out by the Institute of Food Technology of the Jamaica Industrial Development Corporation using breadfruit and banana flour, and at the University of the West Indies in Trinidad with sweet potato, yam and breadfruit flour. In FAO Projects in Brazil, Colombia, Niger, Senegal and the Sudan, flours from maize, millet, rice and sorghum have been used in the production of composite flours for bread and biscuit making. Bakery products from such blends have already been test-marketed and some are now in small-scale commercial production.

The potential for commercial production of composite flours in the Caribbean will have to be determined primarily on the basis of economic feasibility in the larger countries of the region. The figures given in Table 3 for the 'per caput' consumption of wheat flour in six countries having the highest populations can be used for estimating future demand for this product. Before attempting to advocate the production and utilization of these flours it is essential to fully appreciate the nutritional and economic implications of launching any type of programme. A number of problems are encountered in replacing wheat flour in bread. Loaves of the types most popular in the Caribbean, have certain characteristics of volume, crumb, crust, odour, appearance, taste and shelf-life which must be acceptable to both the baker and the consumer. Replacing wheat with appreciable amounts of other cereal flours, starchy flours from roots, tubers or fruits, and concentrates from oilseeds affect the properties of the loaf. Some of the difficulties have, however, been largely overcome by the addition of certain additives in very small quantities. Calcium stearoyl-2-lactylate (CSL) is used in wheat blends with non-cereal flours, and glyceryl monostearate (GMS) is employed in non-cereal products.

Another problem which arises is the quantity and quality of the protein. Since root and tuber flours that might be available in the

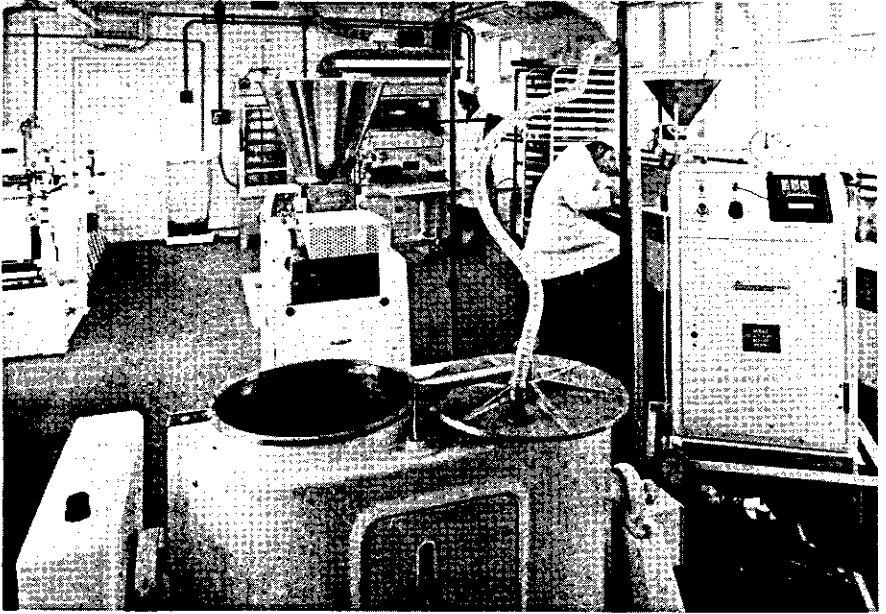


Non-wheat loaf made from  
Cassava starch 80%, soy flour 20%

Wheat - cassava - soy blend

Cassava - soy biscuits

(Institute for Cereals Flour and Bread TNO  
Wageningen, the Netherlands)



The test bakery of the Industrial Development Department of the Tropical Products Institute at Culham where research on composite flours has been conducted in the United Kingdom since 1969

Caribbean for composite flour formulations contain smaller quantities of protein than wheat, a loaf containing appreciable amounts of these flours alone will have a lower protein content than a standard wheat loaf. Their use could accentuate any existing deficiencies of protein in the diet of many families and particularly of growing children. This can be compensated if small quantities of high-grade oilseed or pulse flours are added. Analytical data on six non-wheat flours that have been employed in a Colombian breadmaking project are given in Table 4.

Proteins of wheat flour are deficient in the essential amino acid lysine and possess a protein efficiency ratio and net protein utilization of 0.82 and 37 respectively. The blending of wheat flour



Composite flour mix: wheat flour 6, cassava starch 30,  
soy flour (defatted) 6

(British Arkady Co. Ltd., Manchester)

with root or tuber flours, other cereal flours and protein-rich materials like soy flour, chick pea flour, etc., can have a beneficial effect on the protein quality. It has been demonstrated in various laboratories that some blends have a significantly higher nutritive value than wheat as will be noted from data given in Table 5.

Because of the comparatively low cost of certain vitamins and minerals today, it may be worthwhile considering to enrich composite flours with vitamins A, B<sub>12</sub>, iron and iodized salt and any other compounds thought desirable by the nutritionists for specific areas where these are known to be deficient in the diet. However, before much thought is given to this subject, it is essential to ensure that the new foodstuffs are acceptable to all income groups in any country into which the product is being introduced.

From the data given it is evident that composite flours can be as nutritive as wheat flour, which they are designed to replace, but might they cost the consumer more? As yet, sufficient information on this question is not available as it does vary from country to country and from year to year. In wheat-importing developing countries there is no commercial utilization of composite flours on a nation-wide scale so there is little knowledge of the economic aspects.

It must be realized that wheat production in the major exporting countries is a highly organized and mechanized undertaking, covering vast areas of relatively flat land, with the result that world prices of wheat are lower than many other basic food commodities. In December 1973 when wheat prices were at a recorded high, bread wheats were selling at US \$7.00 per metric ton or a little less than 20 cents per kilo.

Even if the raw materials, whether cassava roots, sweet potatoes, bananas or oilseeds were plentifully available at low cost, the food grade flours required for the formulation would be relatively expensive because of the high cost of processing. Recent rises in fuel prices will unavoidably raise this still further. To market composite flour products at the lowest possible cost to the consumer, the raw materials must be produced and processed on a large enough scale. In Guyana broken rice is available for milling into flour that could be used in breadmaking. However, in the rest of the Caribbean countries there is no established industry for processing export grade food quality cassava starch and there is no production or processing of soybeans (Table 6). In a situation where a composite flour can be produced and would cost only slightly more than wheat flour, the local government might consider it worthwhile to provide a subsidy. This can have the effect of stimulating both local agriculture and industry. Wherever the commercial production of composite flours does become established in the future it should assist each country to become more self-supporting, to save foreign exchange and to maintain the general standard of nutrition of its people.

Table 1. Caribbean - Imports of Wheat and Wheat Flour in Wheat Equivalent  
(Calendar Years: January/December)

Country	Quantity - Metric Tons		Value - US \$		Increases - 10 year period (F)		
	1963	1973	1963	1973	Quantity - MT	Value - US \$	Value - % rise
1. Bahamas	8,195	7,640 (F)	840,000	1,700,000 (F)	-555	860,000	102
2. Barbados	17,157	20,880 (F)	1,340,000	2,056,000 (F)	3,723	716,000	53
3. Bermuda	3,056	3,473 (F)	250,000	320,000 (F)	417	70,000	28
4. Belize	8,598	10,418 (F)	680,000	1,100,000 (F)	1,820	420,000	61
5. Cuba	621,981	886,704*	40,668,000	75,000,000*	264,723	34,352,000	84
6. Dominican Republic	63,409	121,112	4,810,000	14,300,000	57,703	9,490,000	197
7. French Guiana	2,778	4,167 (F)	330,000	650,000 (F)	1,369	320,000	97
8. Guadeloupe	23,613	27,780 (F)	2,730,000	4,400,000 (F)	4,167	1,670,000	61
9. Guyana	38,539	54,167	3,260,000	7,000,000 (F)	15,628	3,740,000	115
10. Haiti	60,334	95,279	4,350,000	11,900,000	34,945	7,550,000	173
11. Jamaica	129,544	209,684	9,406,000	22,319,000	80,140	12,913,000	137
12. Martinique	32,011	37,500 (F)	3,440,000	5,500,000 (F)	5,489	2,060,000	59
13. Netherlands Antilles	14,723	18,057 (F)	1,370,000	2,000,000 (F)	3,334	630,000	46
14. Surinam	14,168	23,884	1,260,000	3,002,000	9,116	1,742,000	138
15. Trinidad and Tobago	86,572	97,558	7,673,000	11,400,000	10,986	3,727,000	48

Notes: F = FAO estimate

Sources: Trade Yearbooks Vol. 26, 1972 and Vol. 27, 1973  
FAO, Rome

\*Unofficial data

Table 2. Caribbean - Imports of Wheat and Wheat Flour in Wheat Equivalent  
(by Trade Season July/June in metric tons)

Country	1972/73*						Imported from:††				
	Wheat	Wheat Flour	Total	Australia	Canada	USA	France	Germany Federal Republic			
1. Bahamas	Ø	10,000*	10,000*	Ø	5,400	4,700	Ø	Ø			
2. Barbados	Ø	13,000*	13,000*	1,200	9,700	200	1,200	700			
3. Bermuda	Ø	3,800*	3,800*	Ø	3,500	Ø	Ø	Ø			
4. Belize	Ø	8,500*	8,500*	Ø	600	6,200	Ø	1,700			
5. Cuba	221,400*	358,100*	579,000*	Ø	579,500	Ø	Ø	Ø			
6. Dominican Republic	70,800*	9,200*	80,000*	Ø	4,400	75,700	Ø	Ø			
7. French Guiana	Ø	3,300*	3,300*	Ø	Ø	Ø	3,300	Ø			
8. Guadeloupe	30,800*	11,700*	42,500*	Ø	Ø	Ø	42,500	Ø			
9. Guyana	45,900	3,700	49,600	Ø	700	47,700	2,500	Ø			
10. Haiti	55,700	12,700*	68,400*	Ø	64,800	4,600	Ø	Ø			
11. Jamaica	65,000*	104,500*	169,500*	Ø	23,100	82,900	14,100	48,600			
12. Martinique	Ø	20,900*	20,900*	Ø	Ø	100	20,800	Ø			
13. Netherlands Antilles	14,000*	1,200*	15,200*	Ø	700	14,100	Ø	Ø			
14. Surinam	9,600*	4,700*	14,300*	Ø	700	12,600	Ø	900			
15. Trinidad and Tobago	76,000*	21,000*	97,000*	300	12,600	78,300	5,900	Ø			

Notes: \*Table 2, p.21

Ø None or negligible

††Table 11, p.30 (slight variations in totals exist)

\*Unofficial data

Leeward Islands Imported during trade season 1972/1973, 22,400 MT from Canada and 7,900 MT from USA. Gifts of wheat flour reported to the International Wheat Council: Dominican Republic, 6,637 from USA; Haiti, 5,611 (USA) and 124 (Canada); Barbados, 182 (USA); Jamaica, 1,121 (USA), and Guyana, 364 (USA).

Sources: World Grain Trade Statistics 1972/1973, FAO, Rome.

Table 3: Caribbean Per Caput Consumption of Wheat Flour  
In Six Selected Countries

Country	Kilograms per year	Grams per day	Energy (Kcals per day)	Protein (gm per day)	Fat (gm per day)
1. Cuba	68.1	186.7	681	16.1	2.1
2. Dominican Republic	13.2	36.0	131	3.9	0.4
3. Guyana	48.4	132.7	483	14.5	1.5
4. Haiti	9.6	26.4	96	2.9	0.3
5. Jamaica	56.0	153.5	559	16.7	1.7
6. Trinidad and Tobago	64.5	176.7	643	19.3	1.1

Source: Food Balance Sheets 1964-1966 Average. FAO, Rome, 1971



Table 4. Representative Values for Nutrients  
in Seven Bread Making Raw Materials

Product	Moisture %	Protein %	Fat %	Ash %	Fibre %
<i>A. Cereals</i>					
1. Wheat flour	13.0	11.0	-	0.69	-
2. Rice flour	12.5	6.7	-	0.82	-
3. Maize flour	12.0	8.2	6	2.4	1.3
<i>B. Starchy Roots and Fruits</i>					
1. Cassava flour	7.1	1.46	0.2	1.3	1.72
2. Cassava starch	15.9	-	-	0.16	0.15
3. Banana flour	11.4	2.8	0.2	1.8	1.5
<i>C. Protein Concentrates</i>					
1. Soya flour (Protinal/Venezuela)	9.5	50.4	0.5	5.7	2.8

Source: "INTERPAN". Joint Report of IIT, TNO and FAO on the Colombian-Netherlands Composite Flour Project, carried out in Bogota, 1971-1972: Part 2, Annex 1, pp. 64-65.

Table 5. Biological Evaluation of Protein Quality in Bread and Biscuit of Six Composite Flour Blends

Product	Flour composition	Proportion	Protein content %	NPU	PER
Bread	wheat flour (white)	100	10.9	37	0.82
"	wheat/rice	70/30	9.9	41	0.98
"	wheat/rice/soya	70/27/3	11.0	46	1.37
"	wheat/rice/soya	70/25/5	11.8	45	1.51
"	cassava/soya	80/20	11.3	55	2.40
Biscuits	cassava/soya	67/33	12.0	51	1.90
"	cassava/soya/caseinate	50/17/33	20.0	74	3.20
Casein (reference protein)		100			2.50

Notes: NPU = net protein utilization %

PER = protein efficiency ratio

Standardized on casein = 2.50

Source: The use of soyflour in Composite Flours,  
de Reuiter, D.

Institute for Cereals, Flour and Bread TNO,  
Wageningen, The Netherlands (unpublished)

Table 6. Caribbean - Production of Cassava and Oilseed Crops, 1973

Country	Cassava MT	Soybeans MT	Groundnuts In shell MT
1. Barbados	1,000 <sup>(F)</sup>	∅	∅
2. Cuba	230,000 <sup>(F)</sup>	∅	15,000 <sup>(F)</sup>
3. Dominican Republic	205,000*	∅	67,000*
4. French Guiana	4,000	∅	∅
5. Guadeloupe	4,000	∅	∅
6. Guyana	14,000 <sup>(F)</sup>	∅	∅
7. Haiti	136,000 <sup>(F)</sup>	∅	2,000 <sup>(F)</sup>
8. Jamaica	22,000 <sup>(F)</sup>	∅	1,000 <sup>(F)</sup>
9. Martinique	3,000	∅	∅
10. Surinam	2,000 <sup>(F)</sup>	∅	∅
11. Trinidad and Tobago	4,000	∅	∅

Notes: <sup>(F)</sup> FAO estimate

\*Unofficial data

∅ None or negligible

Source: FAO Production Yearbook, Vol. 27, 1973.

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*(with special reference to the Countries of the Caribbean)*

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CAJANAQUOTE

O rapture!  
I am food!  
I am an eater of food!  
I am a maker of verses!  
I am the first born of the universal order,  
Earlier than the gods, in the navel of immortality!  
Who so gives me away, he, verily, has succoured me!  
I, who am food, eat the eater of food!  
I have overcome the world.

*From the Upanishads (3,000 years ago)*

*Quoted in "The Song of God"  
By Christopher Isherwood,  
New Amer. Lib. World Ltd., 1948, p. 146.*



#### IV. HARDNESS AND STRENGTH OF WHEAT\*

British wheat, on the whole, is too soft and too weak for British bread. This seemingly unpatriotic statement encapsulates one of the major problems perceived by the milling and baking industries in Britain.

At present, home-grown wheat supplies only 36 percent of the flour used in breadmaking - hardly a desirable situation in the light of the trade deficit, since the remaining 64 percent has to be imported, mainly from Canada or the US. The problem is not simply one of quantity: hard, strong wheats best suited to breadmaking do not thrive in European climates.

Hardness and strength of wheat varieties are milling and baking terms respectively. In a hard wheat, the endosperm cells - which are effectively starch granules in a protein matrix - fragment cleanly along the cell walls during milling, permitting efficient separation of the endosperm from other grain constituents, particularly the bran. Milling of soft wheats results in a lower yield of white flour, and in an off-white flour with a higher bran content.

The strength of a wheat variety is related to its protein/starch ratio. High protein (strong) flour produces a dough of high elasticity, whereas dough made from weak flour is inelastic and consequently retains less of the carbon dioxide produced by yeast fermentation. Loaf volume - an important gauge of bread quality for the baker - is reduced by using weak flour, because gas escapes from the dough during baking, resulting in squat loaves of coarse texture.

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\*Taken from "More grist needed for British flour mills" in *New Scientist* 31, October 1974.

V. THE USE OF CORN  
By S. D. Alexis\*

I have read with interest the article entitled '*Nutrition Facts on Staples*' written by J. M. Gurney. One question I would like answered by the experts in the Caribbean community is: What is being done about the growing of corn (maize) in this area? It is the only cereal that is most suitable for cultivation under our climatic conditions. Yet, I hear so much about rice that I begin to wonder whether anyone in the English-speaking West Indies is aware of the new breed of corn developed in Mexico and now cultivated in Columbia.

It is important that the countries which consume large amounts of imported wheat products look into the possibilities of substituting locally grown food products as much as possible. Principally because of its unique baking qualities and the cultural patterns evolved therefrom, it would not be possible to replace wheat completely in the diet. However, as a partial substitute, I would like to suggest corn and its products.

For generations the rural Venezuelan has used corn as his staple cereal and has developed several ways of preparing corn products that bear some similarity to the ways we use wheat flour. Here are a few preparations from corn that are used by Venezuelans:

"*Cachapas*" is a roti-like preparation which can be eaten as is or used with meat and gravy.

"*Arepas*" are simply corn-bakes similar to our Trinidad "Johnny bake". It is, however, smaller and has a harder crust than the regular bake.

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\*Dr. Alexis who is a biochemist at the Trinidad Nutrition Centre, Wrightson Road, P.O.S., Trinidad, wrote this as a letter to the editor.

"Empanadas" are similar to meat-pies, in which corn-flour has taken the place of wheat flour and the preparation fried instead of baked.

"Pastel" is well-known to Trinidadians but mainly prepared at Christmas and for other festivities. Essentially it is a large boiled meat-pie.

"Boyo" is a large corn-dumpling, either sweet or salt, which can be served in slices as part of a meal.

These five preparations do not contain any wheat flour. I am not suggesting that we use corn wholly Venezuelan style but I think that it may be possible to substitute, wholly or partly, corn flour in some of our foods that utilise wheat flour. This would involve a change in cultural habits and tastes. An ideal time for promoting such a change is now, that we are experiencing a crisis in feeding ourselves with imports from abroad.

If we do not wish to eat that much corn, then perhaps, we should consider using it with the excess ground provisions and some of the "non-edible" fish that we catch to manufacture animal feed. It is not the best way to use the cereal but we could reduce the animal-feed import bill considerably and provide some work for many of our unemployed.

#### CAJANAQUOTE

*"You have to be careful with the way you give food to a hungry man. He has his dignity to preserve".*

*President Julius K. Nyerere*

*Quoted by Rex Nettleford at the award of an honorary UWI Degree to President Nyerere.*

## VI. THE IMAGE OF WHEAT

By Ann Ashworth\*

I was very glad to see Dr. Gurney's article entitled "Nutrition Facts on Staples" which appeared in 'Cajanus', (Vol. VI, No. 4, 1973). The term "cultural superfood" worried me however.

Wheat flour, as Dr. Gurney correctly emphasises, is of paramount importance in the Caribbean as it provides more of our dietary energy and protein than any other single food item, and to describe it as a cultural superfood would therefore appear fully justified and most appropriate. But what of the other characteristics of cultural superfoods? According to Professor Jelliffe<sup>(1)</sup> cultural superfoods "..... often have semi-divine status, being interwoven into local religion, mythology and history. They have profound emotional value to the group concerned ..... and will be the food which mothers will over-value and will tend to feed their young children on preferentially".

It seems to me that although wheat flour deserves to be regarded as a superfood, in actual fact its importance is usually underrated. One need only look to a recent suggestion that housewives could improve the nutritional intake of their children by substituting breadfruit for bread, as wheat flour was said to provide only carbohydrate whereas breadfruit provided both carbohydrate and vitamins.

My concern therefore is that we, as enlightened nutritionists, run the risk of being the only persons who consider wheat flour as a super food. If its nutritional value is so misjudged by those in high

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\*Dr. Ashworth from the Tropical Metabolism Research Unit, University of the West Indies, Mona, Kingston 7, wrote this as a letter to the editor.

<sup>1</sup>Jelliffe, D.B. (1968) "Child Nutrition in Developing Countries", p. 62 Washington, U.S. AID.

office I would be most surprised if the man-in-the-street considered it as evenly remotely prestigious or "super". My own experience with mothers of young children is that neither wheat flour nor its products are highly esteemed. Yes, all of us may eat bread, Johnny cakes, fritters, etc., and with enjoyment, but is their nutritional "image" good? I think the answer is "no".

Let us therefore not sit back and feel falsely secure. Decisions will have to be taken concerning import restrictions and import substitution in all countries of the Caribbean, and we must be wary of decisions which would adversely affect our nutritional well-being. May I suggest, therefore, that Dr. Gurney's timely article be considered essential reading material for all Government policy makers, especially those concerned with economic planning.

#### CAJANAQUOTE

*"We are convinced that the art of preparing cheap dishes is much better understood by the intelligent poor than by those who assume the task of instructing them".*

Meg Dods (*the Scottish Mrs. Beaton*), 1826

Quoted by Tudge, C. (1974)  
IN: "In Praise of Scottish Cooking"  
*New Scientist*, 63, 510-511.

## VII. REDUCING THE WHEAT CONTENT OF BREAD\*

By Max Milner\*\*

### *Cereals as Suppliers of Dietary Protein*

The major cereal foods of the world are wheat, rice, maize, sorghum and millets, and barley, in approximately the order indicated in terms of overall production and consumption. In general, it appears that wheat and rice are each primary food staples for about one-third of the world's population. Although these staples are popularly considered as essentially calorie sources in human diets, the fact is that, in most of the developing countries, they supply the major portion of the protein needs as well. Thus, in Asia, about 60% of dietary protein is supplied by cereals, while, for Africa, south of the Sahara this figure is 50%. As a matter of fact, in Eastern Europe, including the Soviet Union, as much as 40 to 45% of the dietary protein is supplied by the cereals, principally wheat.

Nevertheless, cereals, as primary suppliers of protein in human diets, do have nutritional shortcomings relating primarily to the inadequate balance of their essential amino acids. Nutritionists are in agreement, however, that if calorie requirements are fully met with these grains - and particularly if some supplementary protein foods such as the food legumes are eaten - the protein requirements of healthy adults can be fully satisfied by such diets. In other words, if adult consumption of grains is sufficient, their characteristic amino acid

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\*This piece is taken with permission from an article "Protein-fortified cereal foods for developing countries" published in *Cereal Science Today* (Vol. 19, No. 11, pp. 509-512).

\*\*Dr. Milner is from the Protein-Calorie Advisory Group, United Nations System, New York, N.Y.

deficiencies may be overcome. Serious problems with these foods as primary protein sources do exist, however, for the vulnerable groups of the populations of poor countries.

This is particularly true for infants and young children, whose relative requirement for protein of high biological quality - due to demands of rapid growth - cannot be satisfied by such diets even if calorie requirements are fully met. The need for protein in the diets of infants and young children in developing countries is further intensified by intestinal parasites and frequent bouts of infection, including diarrheal diseases. In these circumstances protein losses are high. If these are not made up from the diet, severe protein-calorie malnutrition, including marasmus and kwashiorkor, may ensue.

#### *The Growing Importance of Wheat in Global Diets*

Since World War II and until recently, world wheat production was increasing at a rate of about 3% per year, barely maintaining pace with global population growth. Unusually large wheat production increases occurred in Canada, the U.S. and Australia, to the extent that these countries from 1950 to 1970 accumulated surpluses well beyond their domestic requirements. Consequently, major emphasis was given to export - not only to the traditional bread-eating, wheat-importing countries of Western Europe, but also to a number of tropical countries where bread was virtually unknown to most individuals.

These exports were stimulated not only by relatively low prices prevailing during this period, but also by intensive promotional efforts. For example, the U.S. Food for Peace Program permitted sales of wheat (also feed grains) to the poorer importing countries for repayment either in local national currencies or on extended low-interest terms. The significance of these surpluses to food-deficient countries is exemplified by India, where, in the 1960's, at a time of failing monsoon rains and consequent drop in food grain production, 15% of this country's basic requirements was imported from the U.S. alone under these

concessionary arrangements. In this period, Canada too exported wheat at attractive prices.

It has been claimed that some food-deficient developing countries exercised poor judgement and foresight in allowing themselves to become so heavily dependent on imports of these surpluses, and that instead they should have been demonstrating stronger initiatives in stimulating their own food-grain production capabilities. The fact is that the recent shortage in world grain supplies, accompanied by a shocking escalation of prices and the disappearance of the concessional sales arrangements, now confronts a number of governments with a serious food crisis for their populations. They are now under pressure to replace these imports with other resources and also to expand the nutritional impact of the now limited quantity of imported grain which they can afford to buy.

It is in this context that the technology of fortification, together with the use of so-called composite flours, shows considerable promise as a means for effectively extending wheat supplies while at the same time maintaining the nutritional quality of popular diets.

#### *Reducing Wheat Requirements by Means of Composite Flours*

The uniqueness of yeast-leavened bread as perhaps the most popular of all staple energy foods derives from the fact that the primary protein of bread wheats - gluten - when hydrated in the form of dough, entraps the gases of yeast fermentation, rises and forms a light, porous structure which when baked provides this highly-prized product. One of the primary objectives of plant breeders is to produce new wheat varieties providing bread with improved crumb texture, loaf volume and consumer acceptance qualities. Their allies in these efforts are the cereal chemists and technologists whose job it is to apply food science and technology to further improve the technical and nutritional qualities of bread.



It has long been a virtual article of faith among bakers and even cereal chemists that wheat, because of its gluten component whose strength is directly associated with the volume, texture and consumer acceptance of bread, is the only food resource possessing these capabilities. Its genetic relative, rye, has these characteristics, but to a much lesser degree. This conviction has been reinforced in the past when some wheat-importing countries, in times of war or some similar crises, have sought to extend wheat supplies for bread purposes by mixing in other cereal or starchy materials such as maize or cassava flours. Invariably, so the conventional wisdom postulates, any appreciable admixture of such diluents to wheat flour causes very noticeable reduction in the volume, texture, color and acceptability of the resulting bread. Thus, during such emergencies, governments were under consumer pressure to revert to all-wheat bread as quickly as possible.

An organized scientific attack aimed at the possibility that wheat flour might indeed be diluted with other starchy materials, while at the same time maintaining satisfactory loaf and consumer acceptance qualities, began only as recently as 1964. The United Nations Food and Agriculture Organization approached the Netherlands Institute of Cereals, Flour and Bread of the Dutch national scientific research group (TNO) in Wageningen, Holland. It proposed that on the basis of recent knowledge relating to starch properties, bread crumb structure and the use of new bread-improving agents which appeared to interact physically with starch, research should be undertaken to determine whether wheat flour with high ratios of non-wheat constituents could be used to produce acceptable bread-like products. The proposal went further in suggesting - on the basis of new information - that since certain food-grade emulsifying agents are able to combine with starch to simulate the gas-retention properties of wheat gluten, efforts should be made to see whether acceptable bread-like products could be produced from starchy mixtures containing no wheat flour whatsoever.

This program at TNO, supported by FAO and the Dutch Government, has now made notable progress toward these objectives. Similar studies were taken up a little later by the Industrial Technology Department of the Tropical Products Institute at Culham in the U.K., and also at Kansas State University, Manhattan. Walter Bushuk, Canadian International Grains Institute, Winnipeg, has also carried out useful investigations in this field.

The basic technical problems of making bakery products without wheat gluten or standard baking flour have been considerable. Nevertheless, a considerable degree of success has attended these efforts. Good prospects exist that this technology will make an effective contribution not only to mitigating shortages of bread wheats in food-importing countries, but also that acceptable bread-like products made from starchy non-wheat materials supplemented with nutritious oilseed or legume proteins can be processed to provide good nutritional impact in countries which produce no wheat.

In the TNO research, as elsewhere, when non-wheat loaves are produced containing starchy materials such as cassava, corn, rice or sorghum flours, the protein supplement used has usually been an edible oilseed protein flour. A typical formula for gluten-free bread developed at TNO is the following:

	Parts by Weight
Cassava flour	80
Soy flour (defatted)	20
Salt	2
Compressed bakers' yeast	2
Sugar	4
Glyceryl monostearate, 10%	10
Water	60

The British research has shown that bread of good quality can be obtained with ordinary bread-making equipment using formulas such as:

	Parts by Weight
Wheat	40
Maize starch	40
Soy flour	20
Sugar	6
Salt	2
Yeast	2
Hydroxypropyl methyl cellulose	1
Water	90

The work at Kansas State University has dealt primarily with the production of high-protein breads from wheat flour with the primary objective of simulating normal all-wheat bread with high consumer-acceptance characteristics. Breads of excellent quality and with protein levels of 15% or more have been produced with soy, cottonseed and chick pea flours and even with fish protein concentrate.

Some of the emulsifying and improving agents which have been found useful in these studies include: glyceryl monostearate; diacetyl tartaric acid esters; hydroxymethyl cellulose; calcium stearoyl lactylate; sodium stearoyl lactylate; glycolipids or sucrolipids; and succinated monoglycerides.

#### *Feasibility Studies with Composite Flours*

Feasibility and marketing studies aimed at commercial introduction of composite flour technology have been carried out in several developing countries. A French-type bread based on wheat, cassava and millet flours has been evaluated in Senegal. In the Modern Bakery of Lusaka, Zambia, soy and maize flours have been used successfully to replace wheat flour in a simple bread formula.

Perhaps the most comprehensive, commercial-scale feasibility-consumer-acceptance program with composite flour products, including various breads and pastry products, has been in progress in Bogota, Colombia. This so-called "Interpan" project, supported jointly by the Government of Colombia, FAO and the Dutch Government with technical assistance from the Wageningen group, involved installation of a commercial baking facility on the premises of the Institute for Technological Investigations (ITI) in Bogota and the regular production and commercial distribution of a wide variety of products. Appropriate experimental protocols were applied to obtain reliable information on consumer acceptance and marketing potentials.

A comprehensive review of this program was held in Bogota in October 1972 at a meeting on the Production and Marketing of Composite Flour Bakery Products and Pasta Goods. The proceedings of this meeting will be available soon from FAO and the TNO group.

In order to provide technical support for such programs, the International Association of Cereal Chemistry created a study group on composite flours in 1971 which meets from time to time to evaluate progress and to disseminate new knowledge. More recently, the American Association of Cereal Chemists appointed a Committee on Improving Nutrition (COIN) to explore and evaluate new techniques for nutritional improvement of cereal products, including those from composite flours.

#### *Prospects for the Future*

For the foreseeable future, low-cost, plentiful supplies of wheat in world markets are a thing of the past. This development has come at a time when a generation of largely urban consumers in a number of tropical countries, particularly in Africa and Latin America where little if any wheat is produced, have enthusiastically adopted wheat foods and particularly yeast-raised breads in their normal diets. In the present economic circumstances many consumers in these countries will have to

forego or curtail their bread consumption and rely again on traditional food staples such as cassava, maize, millet and yams.

On the other hand, a few tropical countries with relatively favorable trade balances, such as Nigeria and Brazil, may be able to continue the import of wheat for bread production, notwithstanding its higher cost.

In either case, these higher costs for wheat bread should stimulate interest in composite flour technology. It can be applied to provide bread-like products made entirely from traditional starchy food staples and also to extend the expensive wheat imports. Such programs will doubtless emphasize improved nutrition as their objective, through the use of indigenous nutritious protein supplements such as soy, peanut and cottonseed concentrates and fortification ingredients such as vitamins, minerals and - where necessary and economical - synthetic amino acids.

#### CAJANAQUOTE

*"The potential that sound, continuing nutrition education offers for health, fulfilment and productivity is so great that it behoves us to find ways to have a consensus of the basic message to all who can benefit from it.*

Ruth M. Leverton, U.S.D.A.

In: Nutr. Notes, 9:2:14 (June '73)

### VIII. TWO BOOKS

*Kay, D.E. (1973) "Root Crops" (245 pp.). London: TPI*

Root crops are the staple food crops of approximately 400 million people within the tropics and the potato is a secondary staple in most temperate countries. The bulkiness of root crops and their relative low value per unit weight have made them lack importance in international trade. Moreover, the tropical root crops are produced mainly for consumption on domestic markets by subsistence farmers, usually on small, scattered plots, often under shifting cultivation and with intercultivation. For these reasons, until comparatively recently, root crops have been rather neglected by research workers in the tropics and much of the agronomic, technical, and economic information available on many of them is scattered and fragmentary. This digest, the second of a series being prepared by the Tropical Products Institute, has assembled in quick-reference form, selected basic data concerning root crops grown in tropical, subtropical, and temperate regions. The data are arranged under twenty standard headings and include particulars of growth requirements, planting and harvesting procedures, yields, products and their uses, processing techniques, trends in supply, demand, and prices, and a bibliography.

*Available from:* Publications Section, Tropical Products Institute, 56-62 Gray's Inn Road, London WC1X 8LU, England. Price: No charge is made for single copies to official organizations in developing countries; all other countries, US \$7.17, including handling and air mail postage.

Nestel, B.L. (1974) "Current Trends in Cassava Research" (32 pp.). International Development Research Centre, Box 8500, Ottawa, Canada K1G 3H9.

*Author's Abstract:* Cassava, long a crop neglected by research workers, is now receiving attention at both national and international research centres, with the largest ever research program for this commodity being provided by the International Centre for Tropical Agriculture (CIAT) in Colombia. The significance of the crop in tropical agriculture and its growth potential, especially as an animal feed, have recently been widely recognized. The recent literature, and a substantial volume of unpublished ongoing work, are reviewed under the headings of cassava as human and animal food, enrichment and fortification, toxicity, industrial use, economics of production, genetic improvement, diseases and pests, factors affecting yield, and improved information systems. A multidisciplinary approach to cassava research and a greater research input are recommended.

# REPORTS FROM THE WORLD FOOD CONFERENCE

## I. FINDING HUNGER'S CURE

By Jean Mayer\*

The Rome Food Conference is now over. It is difficult to evaluate its achievements. It is not impossible that, in retrospect, it will be seen as marking the beginning of an era wherein mankind started considering hunger and malnutrition as planetary problems, to be controlled and reduced on an international basis, in the same way as the great infectious diseases of mankind have been reported and fought on an international basis for at least two generations.

On the other hand, it is also possible that the discouraging impression which on-the-spot reporters conveyed until the last two or three days of the Conference will be justified: The feeling that thousands of persons (overwhelmingly men, as pointed out by such noted women's advocates as Margaret Mead and Barbara Ward) representing over 125 countries, converged on Rome and, between "business" luncheons and dinners and cocktail parties, discussed "long-term" measures to increase production and some steps to improve distribution without making any specific commitment to deal with the near starvation in India, Bangladesh, the Sahelian area or Ethiopia now, or, for that matter, without establishing a precise blueprint of financing or technical assistance to sizably increase agricultural production, to bring about distributive justice as regards food or take effective steps to stabilize populations in the scheduled future.

It would appear that, leaving aside the questions of whether it was worth going through the trouble and expense of a massive Conference

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*\*Born in France, Jean Mayer is Professor of Nutrition at Harvard University (USA) and an expert on food problems.*

*These reports all came from "Development Forum" (published by the United Nations) Vol. 2, No. 2, December 1974.*



to arrive at these results, the following objectives were fulfilled in Rome:

The massive press coverage did sensitize the developed world to the urgency of the World Conference.

Progress was made toward the establishment of an "early-warning" system for food shortages though, at this point, the emphasis would seem to be essentially economic, with insufficient attention being paid to other, newer measures which also tell us something about the nutritional state of the population. One such scheme envisages close observation of a representative sample of children in poorer socio-economic groups, who are usually in a high-risk situation. When, at some point, examination of such a group shows sign of deterioration due to falling nutritional intake, this may constitute a signal that the larger community may soon begin to enter a general danger zone.

The principle of an increase in development funds for agriculture was obtained though no large firm commitments were made either by the "old rich" (capitalistic or socialistic) or by the "new rich" (OPEC) countries.

The principle of co-ordinated national reserves geared to an international food assistance programme was established (though commitments for the current period of shortages are inadequate). It is difficult to say whether the proposed "World Food Council" will be of help to development and relief or whether, by appropriating some of the authority which properly should be exercised by FAO, it will decrease the efficiency of the overall UN system.

II. A DISPASSIONATE VIEW  
By Sayed Ahmed Marei\*

I think we owe it to ourselves to make an objective and dispassionate assessment of the outcome of this Conference. Only then can we translate this outcome into something meaningful and concrete. The first accomplishment, in my view, is the widespread interest and concern regarding the problems of hunger and malnutrition that this Conference has generated, even the chronic problem of malnutrition, with which somehow the world had regrettably begun to reconcile itself, has come into sharper focus. Whatever differences of viewpoints there were within groups, everyone recognized that there was at hand a humanitarian problem which must be solved. It was in this spirit that all participants showed their recognition that we live in an age of interdependence, and that no country, big or small, rich or poor, can live in isolation. This widespread interest and this growing concern are the most important prerequisites for more effective action in future.

Secondly, the Conference accepted the overall assessment of the food problem and recognized the seriousness of the food situation. The Conference rose to the occasion by displaying a heightened sense of urgency for agreeing on a broad strategy and on a minimum package of national and international action.

Thirdly, the Conference accepted the basic conclusion of the Preparatory Committee; namely, the solution of the food problem requires coordinated action on three important fronts:

To increase food production especially in the developing countries;

To improve consumption and distribution of food;

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\*Mr. Marei is the Secretary-General of the World Food Conference.

To build a system of food security.

Fourthly, regarding the objective of increasing food production, the resolution of the Conference to set up an International Fund for Agricultural Development must be regarded as a notable achievement of this Conference. The implementation of many of the specific programmes and policies recommended by the Conference to increase food production will require a substantial increase in the flow of resources for agricultural development. Although it is only a start and the full potential of such a Fund has yet to be developed, the cooperation of Iran, Venezuela, Saudi Arabia, Kuwait, United Arab Emirates and other oil-producing countries, with other traditional donors has been most encouraging.

Fifthly, the decision of the Conference on food information and food security represents, in my view, another landmark. For the first time, we are laying the foundations of a food security system which could ensure in future the availability of adequate food to all at reasonable prices.

Sixthly, the recommendation of the Conference that all donor countries accept and implement the concept of forward-planning of food aid and make all efforts to provide at least 10 million tons of grain as food aid every year, is another significant step. This will not only insulate food aid programmes from the effects of excessive fluctuations in production and prices, but will also provide a more positive policy framework for food aid programmes in the future.

These actions, taken together with the Conference resolutions on fertilizers, pesticides, seeds, land and water, research, nutrition, trade, and some other important topics, constitute an impressive package of national and international action to come out of the Conference. I am also particularly encouraged by the emphasis the Conference has placed upon the importance of mobilizing people, and especially the

small farmer, for rural development and on the balance between political, social and technical factors in determining priorities for agricultural development.

.....The demands on the world community for cooperation and mutual assistance are growing in intensity from day to day. In a short space of time, the United Nations was moved to convene the Environment Conference, the Population Conference, and the Food Conference. All this is encouraging. But, unless the international organizations concerned with development reorientate their activities in order to deal with the complex problems, our achievements will fall far short of the goal.

The primary responsibility for the implementation of many of these resolutions, of course, lies with the developing countries themselves. The governments of these countries must undertake, on a priority basis, all the political, economic, and financial decisions necessary for the attainment of these objectives, particularly those pertaining to increasing food production. Without such actions, international support would not make the desired impact. A resolution on fertilizers, for example, will mean nothing unless the oil-producing countries take the initiative for setting up fertilizer plants, along with the developed countries, who should cooperate by supplying the technology. Steps to set up such enterprises must be taken immediately.....

One area where the action of the Conference fell short of my expectations is the short-term food problem. In the current situation of food shortage and high prices, the most seriously affected countries do need at least 7 to 8 million tons of additional food grain in the next 8 to 9 months. Unless we can provide this grain quickly, a large number of people will face starvation despite all the resolutions and the decisions of the Conference. I hope, therefore, that the recommendations of the Conference, that interested exporting and importing countries, as well as current and potential financial contributors, meet as soon as possible to resolve this problem, will be actively pursued.

All in all, this Conference, I am convinced, will be an important milestone in man's perennial fight against hunger, and I can only hope that the system whose foundations we have laid here will secure the world against a recurrence of the kind of crises we have seen in the last two decades.....

#### CAJANAQUOTE

*I am reminded of the man who was on his knees looking for something on the floor of the living room when his wife asked him, "What are you looking for?" He replied, "I'm looking for my glasses that I lost in the bedroom". "Why then, do you look for them here?" asked his wife. "Because there is no light in the bedroom!" was his answer. I am afraid our so-called industrial and commercial approach to combatting malnutrition is like looking for a solution, not where it is, but just where it is easy and convenient to look for it, regardless of what our real aim is.*

Jacques M. May (1969)

*Nutrition Science and Man's Food  
In: Food, Science and Society.  
New York: Nutrition Foundation.*

### III. PEOPLE'S PRESSURE

*By Peter Bastogi*

Without a shadow of a doubt, the World Food Conference was influenced by the fact that representatives of over 350 non-governmental organizations were present. But it wasn't merely their presence that made the difference. The old image of the voluntary organization being a collection of sentimental and naive individuals with nothing but goodwill to recommend them is out of date. The modern voluntary organization has research facilities, information sources and, above all, an appreciation of political realities. Because of this, the two weeks of the Conference demonstrated that, by carefully planned strategy, it is possible to sway the course of governmental decisions.

The absence of NGO representatives from developing countries was a noticeable, negative aspect. Lack of funds was no doubt the main obstacle. It was thus encouraging to hear at one of the last NGO plenary sessions that the Canadian Government was allocating \$50,000 to transport NGO representatives from developing countries to the Freedom from Hunger - Action for Development Conference to be held in Rome in September 1975.

### IV. PEOPLE'S PRINCIPLES\*

Every human being has the right to a regular supply of food, adequate for his or her total development. Basic nutritional needs in infancy must be met at whatever cost;

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\*From the Declaration by Non-Governmental Organizations participating in the World Food Conference at Rome. (UN document E/CONF.65/NG/21).

Human beings must not starve within a world where there is sufficient food for all, even if this means changes in the wasteful food habits of affluent people, wherever they live;

Hunger or food must not be used by any group, nation or group of nations as a political tool or weapon;

Food and other assistance must be made available as an expression of social justice and fundamental human right;

Food security and the maintenance of adequate, readily available reserves must have at least as high priority as military security;

Secreties on trade, crop, food and nutritional situations must cease to be used in a world which requires openness for early-warning systems against hunger;

Human development in rural family life must come from the combined efforts of men and women all around the world, living in dignity and with adequate and stable income, working together to increase production and reduce waste, while respecting the environment as a base for feeding future generations;

The ultimate success of technological improvement and governmental and intergovernmental action depends upon the development and mobilization of the human race potential - including training for appropriate skills - of every country and community.

## V. A QUESTION OF APPROACH

By S. A. Jabati\*

Everybody is worried about the shortages which are affecting the whole world. There seems to be a determined effort to overcome these shortages. This is evident from the discussions we have had at the World Food Conference. There may be differences in approaches. There are those who want a very quick way of tackling this problem - they are not thinking seriously about what will happen after. But this is a long-term problem. We must make arrangements whereby we are not caught again in the way we have now been caught. We need more people who are thinking both about now and after.

There has been no confrontation between the developed and developing countries, I would say. Again, it's really a question of approaches. When we have come, for instance, to discuss the possibility of getting more money into agriculture, there has been a difference of the emphasis which certain countries have been placing on the fact that, because the Arabs have got some money, they ought to contribute. While the Arabs say: "You don't have to tell us what we already know. We are interested in helping the developing world because we are, ourselves, developing. We don't have to be told from outside that we should help."

We feel that perhaps if the nations cooperate, the Conference will have succeeded.

We, in the developing world, were desirous that more money be put into agriculture. We felt that even if you did all the research work and you spent hours in Rome discussing problems about agriculture if no arrangement were made to provide more money to develop agriculture

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\*S. A. Jabati of Sierra Leone, Chairman of the WFC First Committee, is Ambassador to Italy and UN organizations in Europe.



no progress would be made and the problem would not be solved. We see now that there is a definite agreement reached about the necessity of asking the UN Secretary-General to call for a meeting where arrangements could be made to provide additional funds for agricultural development. This is one thing that has been a success. We see also the awareness of the countries that do have food and money. They are aware that it is essential for them to put together as quickly as possible as much food as they have, and as much money as is needed so that the immediate problem can be tackled. Then, we see everyone is united about food security to ensure that every nation will make its own arrangements to tackle the security problems relating to food. And finally, everyone is agreed that there is need for a mechanism to implement the recommendations which have been made by the Conference.

The developing countries themselves must, in the first place, realize that without food, there is no government. So they should give first priority to food production in their own countries.

In the past, much emphasis was placed on developing other areas of their economies. They should devote and allocate more of their resources to agriculture. Secondly, they must realize that those who are in the food production industry are as important as people who are in other industries. The developing countries should be determined to involve the people in rural areas in all the arrangements they are making for increased food production. They should be determined to make certain sacrifices to ensure that if they are producing a surplus, it should be processed and preserved so that when they are short, they will be able to utilize what they have kept in store.

They should be determined to let food production cope with their increase in population. If they are going to have more children, they should produce more food. It is very difficult to tell these people not to produce children, but if they are going to produce more children, then food production should exceed the rate of population increase. There should be a determined effort.

## READERS' EVALUATION OF CAJANUS

*by**J. M. Gurney*

In late 1973 we carried out a readership evaluation of 'Cajanus'. The following information refers to the 530 replies received from individual readers by the end of 1974:

The average regular readership of each issue of 'Cajanus' is three to four people. This figure, if extrapolated, infers a total readership of 6,000 to 8,000.

Sixty-one percent of respondents have been reading 'Cajanus' for at least three years. Ten percent have taken 'Cajanus' for less than one year. All but four respondents wish to continue receiving 'Cajanus'.

Fifty-seven percent of respondents use 'Cajanus' for teaching.

Fifty percent of respondents read all or most of every issue and a further forty percent find something to read in all or most issues.

Seventy-five percent find something very interesting in all or most issues.

Fifty-three percent of respondents show all or most issues to another reader.

Eighty-eight percent think 'Cajanus' is about the right size and think quarterly issues are about right. However, we have increased the frequency of issues again to six each year, starting with Volume VII.

Fifty-eight percent say 'Cajanus' often stimulates their mind, and eighty-one percent think the style is not "boring".

Eighty percent think that most articles are neither too simple nor too complicated, but are about right.

Thirty-four percent think the new section "Nutrition Made Simple" is well worth reading, and a further thirty-six percent consider it quite good.

We copy below a random selection (chosen using random number tables) of comments in various headings ( $n$  = total number of responses). We have not edited these responses at all, believing readers would like to see a full range of comments.

*1. General Comments - (n = 162)*

- (1) There should be more articles concerning Haiti, Dominican Republic and Puerto Rico.
- (2) As it stands, I think the content, the range of the articles and the style are all good. I suggest these criteria be accepted as desirable for continuation.
- (3) Continue to reproduce articles from other important agricultural and nutritional journals.
- (4) Should be sent to libraries of secondary schools and teacher training colleges.
- (5) The nutrition section is too complicated for nurses and other lay people.
- (6) Please keep 'Cajanus' going.

- 7) Don't let 'Cajanus' get any longer - not because it won't be interesting but because there is so much reading matter from other sources which has to be read that the sight of a large issue is enough to deter you from embarking on reading any of it.
- (8) Agencies (funding) who foster improving nutrition in developing countries and what is their criteria.
- (9) It may prove interesting and useful to feature occasionally the work of DCN graduates in the field. More articles on social and economic aspects of the nutritional problem should be featured.
- (10) Faddism: What is being done about foods which could easily be obtained in one country (Caribbean) and not eaten by that people - could some organization arrange to sell this food to other islands whose people eat the same food - this would be one way to cut down the food shortages.
- (11) I think people would be very interested to read about food production and preservation and also budgeting because this is a major problem throughout the Caribbean Islands.
- (12) A most valuable and useful journal and the fact that it is free means you are also providing available service.
- (13) It would be very useful to put schools, intermediate and secondary, on your mailing list.
- (14) I appreciate receiving copies of this journal. It has been very helpful to the faculty, staff and students.
- (15) A yearly index of articles would be helpful. Perhaps in the last issue.

- (16) Why can we not produce sufficient protein of high biological value in the Caribbean at prices reasonable to the public purse? When will we be able to farm the sea more extensively? Does our climatic conditions prevent us from growing soya beans? Some articles on this subject from an agricultural, ecological and economic standpoint will be welcomed in our new relationship - commonwealth and EEC wise.
- (17) None, except keep up good writing.
- (18) I enjoy 'Cajanus' and hope I will always get it.
- (19) The binding needs improvement, it often comes apart.
- (20) A place in the journal to show how 'Cajanus' can be obtained.
- (21) There is a dire need for an adult educational programme to teach:
- (i) how to buy economically;
  - (ii) proper food preparation to retain vitamins;
  - (iii) discouragement among school children of the excessive use of 'pop' drinks (when milk is available) snacks - potato chips, cheetos, etc. (Use of more fruits for this).
- (22) Basically, 'Cajanus' should be of use to the nutrition workers in the Caribbean. A good quality journal must lead to improved standards of nutrition work and better training opportunities.
- (23) This is the only issue I have read (recently assumed duties). I think the articles are quite interesting and would like to continue receiving copies of 'Cajanus'.

- (24) Some economists working in schools, have a good opportunity of improving the general level of nutrition in their communities by teaching the school children, who may be able to influence their parents in improving family feeding habits. The public would become more aware of this, if more articles on home economics are included in 'Cajanus' written largely by home economists.
- (25) Time permitting I might be able to make some suggestions, but not now. Being specially interested in the Caribbean area I have a personal as well as professional interest in the journal.

II. *Usefulness of 'Cajanus' to work* - (n = 237)

- (1) I use it in teaching nutrition to nursing students because of its relevance to the local situation and its up-to-date information.
- (2) A number of articles have been useful teaching aids in A-level biology.
- (3) Articles are sometimes used for discussion groups.
- (4) For subject matter on teaching and as a teaching aid.
- (5) It presents a broad view of nutrition of interest for several disciplines.
- (6) Not directly, my present work being mainly in the teaching of epidemiology. But helps to keep me informed in MCH and nutrition.
- (7) Very useful for basic principles, as I am not a professionally trained nutritionist.

- (8) It is exceedingly useful. I would be happy to pay for it.
- (9) Of particular importance to me is the fact that the information is footnoted.
- (10) It is very useful as it pertains strictly to the climatic, geographic and economic situations of our country.
- (11) A different and important perspective.
- (12) While appreciating the importance of infant feeding, a greater emphasis on food technology as applicable to the Caribbean area would be useful.
- (13) Living in a non-tropical climate, it is useful to be reminded of the differing conditions in another part of the world.
- (14) Especially articles on child rearing and nutritional diets.
- (15) For me, provides contact with community problems; students, exposure to field conditions.
- (16) Articles concerning education and teaching are useful.
- (17) I am saving the issues for my library.
- (18) I keep up-to-date with the new trends in nutrition.
- (19) I am not employed professionally.
- (20) Source of reliable data and reference.
- (21) This is a clinical nutrition department. 'Cajanus' is not really useful here but most of us wish to keep an up-to-date background in nutrition generally.
- (22) 'Cajanus' is very useful for me as a Food Service Supervisor but now that I am assisting as a Home Economics teacher, most of the articles do not seem to be of great help.

- (23) Use it for good source of material for cross-reference on subjects of interest.
- (24) Theoretically - yes; practically - difficult to apply ideas or solutions.
- (25) I wish I had the time to read everything in the magazine. I find it quite good.

III. *Particularly Interesting Articles* - (n = 100)

- (1) Topics well dealt with. Readers should present this to face the people more squarely.
- (2) Some more local dishes and recipes may be included.
- (3) I receive 'Cajanus' four or five months late after they are issued.
- (4) Items such as 'Nutrition News and Opinion from the Caribbean' gives one a quick look at what is taking place in the islands.
- (5) Gives a run down on preparation of a substitute food to replace expensive protein foods - both local and imported.
- (6) I skim through everything and pick out what concerns me. I don't expect to obtain one hundred percent from any journal.
- (7) I have a file of 'Cajanus' from 1968 onwards.
- (8) There are several others which impinge on my direct interest in food production and utilisation; I shall always welcome more.
- (9) These articles are very useful and can be used as reference for papers in our own areas.
- (10) More information could be provided on cheap well-balanced meals.



IV. *Particularly Boring or Irrelevant Items* - (n = 43)

- (1) Leaf protein articles
- (2) Nutrition in the Dominican Republic (irrelevant)
- (3) Editorials from local newspaper.
- (4) Breast-feeding exhortations.
- (5) Can't recall offhand.
- (6) I can't recall any.

V. *Nutrition Made Simple* - (n = 89)

- (1) This information should reach sixth formers, grade students and young people in classes run by organisations such as YW and YM and Red Cross, etc.
- (2) Articles on the vitamins and minerals needed for proper health and the body's daily requirements - when found.
- (3) Because some people reading 'Cajanus' here speak English as a second language, the articles are sometimes complicated.
- (4) There should be a topic in each 'Cajanus' on a subject similar to this on the new section.
- (5) Nutrition education is one of the most critical needs in L.A. area.
- (6) Pictures or diagrams should help to simplify matters in general.
- (7) Diet for diabetics.
- (8) Persons who read 'Cajanus' should be able to share this material with grass root personnel.

- (9) I have not read this section as yet - 'time'.
- (10) Of course it all depends upon your reader level, but to reach the layman's mind nothing could be better. More of this type of material is needed!

VI. *Suggestions for Improving 'Cajanus'* - (n = 161)

- (1) More approaches to teacher instruction; 'How to do' articles on preparing classroom material for teaching basic nutrition concepts to primary students.
- (2) The target audience and objectives should be redefined. More food production related articles should be included.
- (3) Make the binding stick on or abandon it. Have you tried having a whole number devoted to a single subject plus, of course, Cajanaquotes?
- (4) Couldn't 'Cajanus' contain any other item relating to home economics other than food and nutrition?
- (5) I am of the opinion that the newsletter is just right.
- (6) If this newsletter is intended for the average person, some simple articles should be included.
- (7) There are too many formalities; omit some; make the magazine more attractive by designing a nicer cover; a list of interesting items in the issue listed on the back giving page and two line summary.
- (8) Introduction of photographs.
- (9) Use of graphic and pictorial presentations; special listing of articles under headings, for the housewife, the pregnant mothers, the nutrition teacher, etc.

- (10) Easier to read format, often don't know if I'm on the next article or not - Is printing not feasible?
- (11) It is okay.
- (12) Include more annotated bibliographies especially from journals, which are not commonly or universally available.
- (13) Add pictures.
- (14) Suggestions for beating the 'grain crisis' and budgeting should be relevant to all in the Caribbean.
- (15) Just right.
- (16) I receive a wide range of nutrition health publications, and consider you probably have the most realistic for the average concerned reader on these subjects.
- (17) Keep articles diversified; keep articles current with possible expectations on forecasts.

VII. *Special Topics You Would like to See in 'Cajanus'* - (n = 235)

- (1) Relationships between nutrition and infectious diseases.
- (2) Breast-feeding; Caribbean food habits; Nutrition education.
- (3) Post-secondary nutrition in the Caribbean; News from CAST (Jamaica) re nutrition programs there; Careers in the area of food and nutrition.
- (4) FPC in human nutrition, a criticism of all methods developed in both Americas.

- (5) Make an attempt to give the nutritional evaluation of every island in the Caribbean from the point-of-view of public health, socio-economic, clinical, dietetic, bio-chemical, agricultural, etc.
- (6) How to go local in our eating habits; Do we need to be fat? Is the fat baby the strongest baby?
- (7) Complete explanation of claims of fashionable food fads. So far you seem to be sublimely above such things; Educated non-media people are full of these things; I like your realistic cost conscious articles very much.
- (8) Caloric contents in some of the substitute suggested foods; Brief statistics on diabetics in the Caribbean and substitute diets.
- (9) More on education and teaching.
- (10) Articles correlating problems of BWI with other areas.
- (11) Local uses of plants in bush medicines; Uses of more indigenous plants for food.
- (12) Any topic that will help to jolt the average Caribbean citizen from his complacency re nutrition.
- (13) Cost-benefit analysis-benefit versus inputs in feeding programs; Nutrition and its relationship to family life; Integration of nutrition and food production; Population planning and nutrition.
- (14) The role of the nutritionist in population activities; A synopsis of Dr. Cicely Williams' work.
- (15) Child nutrition.

- (16) Economics of nutrition; Economics of food policy; Comparative patterns of consumption.
- (17) Adolescence and socio-economic status.
- (18) Caloric value and protein, etc. content of prepared baby feeds, e.g. Gerber - applesauce, vegetables, etc.
- (19) I would like to see one page telling us a little about diets.

### LIBRARIES

Libraries receiving 'Cajanus' were also asked questions. Thirty-eight libraries responded. Responses are summarized below.

- (1) Clearly too many copies of 'Cajanus' do not reach their destinations or take well over a month to arrive.
- (2) Twenty libraries circulate 'Cajanus' and ten file it directly (sometimes after the librarian has read it). Three send it on somewhere, two copy specific articles and one puts it on display.
- (3) Copies are often made of 'Cajanus' articles by thirty of the thirty-eight libraries.
- (4) A random selection of the twenty-nine responses received to the question "Is 'Cajanus' read much?" follows:
  - (i) It is used as a source for information.
  - (ii) CRS/Madagascar has a pre-school health/nutrition education program which 'Cajanus' complements very well.
  - (iii) Students collect information for teaching and for individual study and making of teaching aids.

- (iv) We read 'Cajanus' not so much for general topics such as "Nutrition and Fertility" and "Food Faddism" but rather for specific articles related to the Third World such as "David was born in the city" and "Grain legumes - Answer to the protein shortage".
  - (v) We hope it will be read - we are trying to build our collection so that students will have resource in force.
- (5) There were seven suggestions to the request for "any aspect of nutrition that readers often wish to look up that can be found neither in 'Cajanus' nor in a suitable form in your other material?" They were:
- (i) Mainutrition - its effects on the Jamaican child.
  - (ii) Foreign analyses don't carry local brand names, e.g. Enfamil, Almiron.
  - (iii) Resumé of reports from research centres such as IRRI, CIMMYT on developments on breeding new cultivars of staple foods.
  - (iv) Simple menus for balanced diets.
  - (v) Nutritive value of local foods - fruits and vegetables.
  - (vi) Food value, e.g. coconut, taro, breadfruit, etc.
  - (vii) Social science aspects of nutrition with data from local research.
- (6) Twenty-one libraries responded to a request for suggestions. A random ten responses are copied here:
- (i) More bibliographic information needed on sources cited; more illustrations might make the publication more attractive.
  - (ii) Could be in letter form; could be illustrated.

- (iii) It would be useful if, in each section, you provided a form on which your readers could suggest topics for future issues. Please maintain the 'down-to-earth' common sense approach to planning the content of your newsletter - the more practical, the better.
- (iv) Please send any future questionnaires with deadlines by air rather than surface mail as we received this after the deadline.
- (v) We like to see the detailed breakdown of the local foods, e.g. the percentages of iron, calcium, magnesium, etc. and also the different kinds of vitamins.
- (vi) Invite readers to submit verses and/or rhymes bearing out some nutrition fact. Inclusion of crossword puzzles and quizzes could be a source of encouragement for those individuals who are not directly concerned with nutrition education.
- (vii) Just keep publishing! More articles if possible.
- (viii) I like the local approach, then the Caribbean approach, then the world approach especially these days of food shortages worldwide.
- (ix) You published a list of 'local names of fruits and vegetables' last year that is unique and most useful. Expansion of that list would be helpful as well as expansion of the idea to other institutions in other parts of the world.
- (x) Would it be at all possible for you to send in the back copies? (*Yes, certainly - Editor*).

We thank all those readers who replied to our rather long evaluation questionnaire. We have found your responses and suggestions very helpful.

We have taken this opportunity to prune our mailing list from about 2,000 to 1,352. Sixty-two percent of our readers now come from the Caribbean. We send copies to ninety-five countries in all parts of the world.

PUBLICATION

**FOOD COMPOSITION TABLES FOR USE IN THE ENGLISH SPEAKING CARIBBEAN**

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## NEWSPAPER CLIPPINGS

### ANOTHER BOOST FOR AGRICULTURE

*From the Advocate-News, Barbados, 10 October 1974*

Welcome indeed is the news that the Ministry of Agriculture is planning reorganisation of the extension services. The intention to create a demonstration area for small farmers and a mixed farming pilot project are also steps in the right direction.

The fact of the world food shortage and the seriousness of its implications seem to have penetrated the consciousness of Barbadians to the point where many of them have cultivated small lots and odd corners and planted vegetables.

What they might not be aware of is the fact that the services of the extension officers are available to them for advice or specialist assistance on any agricultural problems they may encounter.

The Ministry has eight extension officers and the Establishments Division, which is responsible for creating posts in the Civil Service, is now considering the proposals to increase the staff.

Barbados' biggest earner of foreign exchange, tourism, has much of its earnings re-exported because the major portion of Barbados' food-stuffs is imported. But the question of imported food does not affect the hotel and tourist trade alone. Every Barbadian consumes a major percentage of his food budget in the form of imported products.

Add shipping costs to the production price and at once it is obvious that Barbados could considerably reduce its food imports bill by growing its own food. This does not mean that home grown food will be significantly cheaper - given the cost of fertiliser and pesticides - but we would be supporting our own farmers rather than foreigners.

Small backyard gardens can make a significant contribution to

the individual household budgets and their cumulative effect could boost the national agricultural effort.

In the face of what the agricultural extension officers could be required to undertake if everyone who could be involved in agriculture sought their advice, it becomes painfully obvious that eight extension officers would be impossibly overburdened.

To state the obvious, agriculture is more than tilling the soil, planting seed, fertilising, watering and reaping. Also involved are the choice of the right crops for the type of soil, practices of inter-cropping and crop rotation, pest control, etc.

Extension officers also are involved in animal husbandry, artificial insemination, fruit tree budding, grafting and development. Poultry, pigs, cattle, sheep, rabbits, all fall under their aegis in addition.

The establishment of a demonstration area for small farmers should be pushed for all it is worth, for farming has been hampered to some extent in Barbados because many who have long been involved in it neglect or refuse to change their cultivation and planting methods or try new strains.

A point made some years ago by an agricultural specialist here in Barbados was that it was difficult to show a farmer how to grow vegetables if he had been growing them all his life. What the specialist meant was that change is abhorrent to people. Farmers were likely to continue to muddle along in their old ways no matter what new methods were developed.

These then are just a few areas in which extension officers would have their work cut out. With the expansion of the service, the Government would have to inform farmers of every size that the officers would be available to them for advice and other services.

What we would also point out is that in this limited recital of the role of the extension officers and the importance of agriculture to Barbados, no mention has been made of sugar cane or soil conservation; so it becomes even more apparent how vitally necessary agriculture and its rational development is to Barbados.

#### PUSHING USE OF LOCAL FOODS

*From the Advocate-News, Barbados, 11 November 1974*

The Barbados Marketing Corporation is identifying itself with the efforts being made to encourage wider use of locally produced foodstuff. Last week at a special luncheon hosted by the Corporation an appeal was made to the local hotel industry to make more use of locally-produced foods in their menus. The appeal came from Mr. John Connell, a director of the BMC. It was a timely appeal and part of the common-sense approach that has been shown earlier by the Agricultural Development Corporation (ADC) in getting people in the country to develop a wider taste for the foodstuff we produce.

In fact, the ADC through Mrs. Carmeta Fraser has pioneered, as it were, a number of tasty and mouth-watering recipes that add substance to Mr. Connell's appeal. A number of hotels has already begun to feature special buffets when the emphasis is on local foods.

In stressing grounds for his appeal Mr. Connell observed that Barbados imported some eighty percent of her food and he was fearful that the time would come when our overseas suppliers would not find it easy or convenient to keep us supplied. It is an experience we have

been having from time to time with individual food items, but fortunately so far there have been available substitutes. It need not be always this way.

If the impression is given that we are becoming too preoccupied with food and what we can do to ensure that we produce all we can, we must hasten to point out that food, like oil, is somewhat scarcer these days and this scarcity is often reflected in skyrocketing prices. Food sufficiency is therefore an important factor in stabilising any country's economy. The few countries in the world that have managed to match achievements in their agriculture with those in other areas of industrialisation are today the ones that are better placed to ride out these trying times.

Our food import bill is extremely high and makes us more susceptible to the economic vagaries being felt in the countries from which we import. It is not surprising therefore that our leaders should be heard renewing pleas for more emphasis to be placed on agriculture. It is also significant that fewer are the platitudes aired these days. It is as if we have come to our moment of truth. And the truth is that we have allowed ourselves to drag our feet for too long. But then a series of widescale droughts and man-made economic problems have been enough to provide a rude awakening, not only for ourselves, but also millions of others in other parts of the world.

There is a scramble to make good any earlier neglect and to quicken the pace of agricultural development in many parts of the world. It will be easier for some than for others.

In Barbados we are still fortunate in that we have an encouraging base on which to build. If anything what we lack is a great enough will.

And this brings us back to Mr. Connell's appeal. We must be able to deliver the goods once we get people sold on the idea of eating

locally-produced foods. It will not do for householders and catering businesses to gear themselves more widely for local foods and then discover that the local food is not there.

The BMC has certainly done much to help encourage local production of food. It has made a number of costly errors from time to time, but in our view, while regretting these, we have always maintained that the Corporation should not be run into the ground. The potential is there for it to serve the country. The Corporation has been let down more often by some of the people whose duty it was to serve it, by the people whom it serves.

But it has still managed to prove that our country and its people can all do a lot better with more locally-grown food. We are sure that in borrowing an idea from the Board of Tourism to make our point, we will be forgiven.

#### *PROSPECTS FOR INDUSTRY, FOOD*

*From the Trinidad Guardian, 7 December 1974*

The Prime Minister's report to the House of Representatives yesterday on his State Visit to the People's Republic of China and his unofficial visits to the United States, Japan and Hong Kong was a comprehensive statement on a tour, the full significance of which will only unfold in course of time.

The wide scope of the discussions carried on by the mission with industrial and financial interests is deserving of careful attention. It embraced energy-based industries like petro-chemicals and fertilizer, steel and aluminium and synthetic fibres. It embraced food in various aspects including the derivation of protein from petroleum and from

molasses; and also car assembly, including the manufacture of components, and port development and shipping.

It was once stated in an official announcement that in the Caribbean only Cuba outstripped Trinidad and Tobago in the matter of State participation in industry. One inevitable consequence of the tour is that this participation is likely to be extended still further by joint ventures with large foreign enterprises and not the rescue of struggling firms.

If we take fertiliser as an example. With the Cabinet's decision that the Government should increase its take in the new fertiliser project with W.R. Grace and Co. from fifty percent to fifty-one percent the further step of seeking participation in the equity of the on-going Federation Chemicals, and the other fertiliser projects proposed as joint ventures, the Government will be placing itself in as strong a position in fertiliser as it is in sugar. Both these commodities are in short supply in the world.

The proper use of the oil revenues opens up prospects for wide industrial expansion though with agricultural development well in the picture and to be stimulated by oil money. A trend towards agro-industry is to be found in the statement but there is need for care.

Entering on large-scale production must not mean the ouster or the subordination of the small or the medium-sized farmer. The idea of co-operatives and semi-co-operative arrangements will have to be intelligently pursued so that farmers can be won over.

Manufacture of farm machinery locally would open up new ground in the industrial sector. But the farmer needs to be involved from the beginning and no doubt he will be in on the all-important Food Consultation at Chaguaramas early in January.

### THE WORLD FOOD PROBLEMS

From the Nation, Barbados, 8 December 1974

Ever since the beginning, man found that he had two basic necessities - food and shelter. Down through the years, sophistication - sometimes known as progress, has covered these basics with a kind of icing - but they remained the same.

No doubt then, that in the world of the Seventies, somewhere to sleep and something to eat are still the *sine qua non* of our existence. To put it plainly: To live, you must eat!

With rising costs and lowering productivity world-wide and the agonising spectre of a planet with too many mouths to feed, people in many parts of the world have all but given up hope.

A recent world food conference was held in Rome, under the auspices of the United Nations. Our Minister of Agriculture was among the scores of leaders in the ancient city and from all indications, it was just another forum for the never-ending stream of rhetoric to which we've grown so accustomed.

The notion that advanced nations should make up the food deficits of the poor "has been shelved", says Rockefeller Foundation vice president Sterling Wortman. He explains that "requirements would become so vast and the free-food programmes so costly that this approach would go beyond the combined means of most suppliers, probably within a decade".

But is this really so - when one considers that the United States alone is spending billions of dollars on the new V-bomber, a replacement of the old B-52s which brought so much pain and suffering to the people of Vietnam recently?

That announcement is devastating news for many Third World countries, on whom Nature has been recently most unkind, visiting them with drought, floods and the resultant famine, not to mention the corruption

and bureaucratic bungling for which their governments are responsible.

Fortunately, Barbados is not one of those countries. We're blessed with year-round excellent weather, a fertile soil and lots of people, yet our import food bill keeps going up all the time.

Empty platitudes are served up almost every day. Grow more food! Grow more food!

It is the opinion of this newspaper that there comes a time when the seriousness of any given situation demands that the problem be taken by the scruff of the neck and licked.

People elect government to govern. They elect leaders to lead and set examples.

Take a drive or better still a walk anywhere in Barbados and see the amount of unused land just growing luxuriant bush. What does it take to get home to people that the problem is a serious one? Are we going to let the situation reach an irreversible point and then start to panic? Why can't intelligent leaders - not only politicians - mobilise Barbadians and get us to rise to the occasion?

The inertia and state of helplessness, as reflected in the emergency budget, must be removed if we are not to end up on the rocks. We have said it before and we'll say it again. Barbados does not need great leaders - it needs leaders to bring out the greatness in its people.

The challenge ahead as we move into 1975 is formidable and the concern, let's face it, is not only humanitarian. A world where some enjoy plenty while others sit on the precipice of famine is not a politically safe one. Where is the determination and will to succeed?



The world's food shortages and population growth are not unmanageable. Basically, it calls for ideas - intelligent, productive ideas - and a little discipline, to solve any human problem.

Here, there is no shortage.

CAJANAQUOTE

*"In my opinion a child has marasmus when he is so thin he cannot possibly get any thinner".*

*Professor Ken Stuart (UWI)*

*Quoted by Bras, G. (1974)  
W.I. med. J., 23, 160-164.*

## LETTERS TO THE EDITOR

From Jacqueline Reynolds, Dietitian, N.C. Memorial Hospital, Chapel Hill, N.C. 27514.

Dear Sir:

*I truly enjoy your publication and share it with my fellow dietitians.*

*I have forgotten what the title 'Cajanus' means and would appreciate an explanation.*

*Have a happy holiday season.*

*Sincerely*

*Jacqueline Reynolds*

11 December 1974

Editor's note:

*Cajanus cajan* is the scientific name of the pigeon pea (gungo in Jamaica). Because the pigeon pea tastes so good, is so full of nutritional value, is widely grown in back gardens and has such commercial and nutritional potential we consider it a worthy source for our name.

From Carlyle Harry, 55 Hadfield Street, Lodge Village, Greater Georgetown, Guyana.

Dear Sir:

I take this opportunity to thank you for mailing copies of 'Cajanus' to me during the year 1974.

The publications have been very helpful to me during my academic and occupational pursuits, and I look forward to the same quality of contents during 1975.

On this occasion, I wish you and the rest of 'Cajanus' staff all the best for the new year and continued progress in the future.

I am also hopeful that you will receive the necessary funds and other forms of assistance to promote additional educational and public relations programmes to further nutritional improvement within the region.

Sincerely

Carlyle Harry

9 January 1975

## NUTRITION MADE SIMPLE

### PRINCIPLES OF VEGETABLE PRODUCTION\*

Part II: *fertilizing, systems of vegetable production and chemical weed control - by Winston Charles*

#### FERTILIZING

*Mulching* is accomplished whenever the soil surface is artificially covered. Molding is a form of mulching (soil mulch) as are covering the soil with straw, leaves, refuse, paper, dried grass, etc. In recent years polyethylene has received considerable attention as a mulch for various vegetable crops.

It is desirable to apply a nitrogenous fertilizer preferably  $\text{Ca}(\text{N}^0_3)_2$  at the rate of 75 lbs. per acre before laying down organic mulch. This prevents nitrogen starvation or denitrification of the soil from taking place.

The purpose of mulching is chiefly to conserve soil and also to control weeds, improve uptake of mineral nutrient resulting in increased yields and to control certain insect pests and diseases in the soil.

Many of the warm season crops grown in the tropics are fairly tolerant of acid soil conditions. Thus satisfactory crops can be produced on soils having a pH reaction as low as 5.5. Many of the cool temperature vegetables are less tolerant of acid, and the application of lime is necessary to increase the pH to an optimum level of 6.5.

As new varieties of vegetables are developed for tropical areas increased use of fertilizer is essential to attain their full potential.

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\*Part I of this article appeared in the last issue of 'Cajanus' (Vol. VII, No. 6, pp. 280-285).

*Mineral nutrients:* In general, vegetables should have a continuous supply of nutrients and moisture for successful production. Of the essential elements required for crop growth, nitrogen (N), phosphorus (P) and potassium (K) are the ones most generally lacking. Therefore these are the three major ingredients of most inorganic fertilizers. The ratio of these are expressed in the same order, for example, 10, 20, 10 means 10 parts N, 20 parts P and 10 parts K.

The rate of fertilizer application is usually determined experimentally and varies with fertility of soil, cropping system, crop to be grown and gross return in relation to marketing.

	NITROGEN (N)	PHOSPHORUS (P)	POTASSIUM (K)	CALCIUM (Ca)	MAGNESIUM (Mg) and IRON (Fe)	SULPHUR (S)
Functions in plant.	Builds up vegetative portions of plant.	Cellular metabolism. Fruit and seed production. Root growth.	Formation and transport of carbohydrates.	Soil reaction control. Connected with absorption of all nutrients.	In chlorophyll	In certain proteins.
Problems and special considerations.	Can cause excessive vegetative growth and succulence if given in excess. Can cause soil to go acid if given too frequently.	An immobile element not in solution in soil but absorbed on particles, therefore roots must come in direct contact with P.	Important to root and tuber crops.			Particularly important in onions.

### SYSTEMS OF VEGETABLE PRODUCTION

The three cropping systems used in vegetable production are crop rotation, succession cropping and intercropping or multiple cropping.

*Crop rotation:* Systematic arrangement for growing different vegetable crops in a more or less regular sequence on the same land. The duration covers a period of two, three or more years. This system facilitates better control of diseases and insect pests and better use of soil resources.

*Succession cropping:* The growing of two or more crops on the same piece of land in one growing season. The system requires heavy fertilization and good cultural practices.

*Intercropping:* When two or more crops are grown together on the same piece of land. It is also known as multiple cropping.

Vegetable crops are either seeded directly into the ground or transplanted.

Examples of direct seeded crops are: beans, carrot, turnips, corn, okra, raddish, pumpkin, watermelon and cucumber.

The rate of seeding is determined by viability, extent of contamination with insect pests and diseases and the condition of the soil.

Examples of transplanted crops are: tomato, eggplant, cabbage, cauliflower, celery and lettuce.

*Direct Seeding:* Seeds can be sown by hand or using seed drills. The common seed drills open the furrow, drop the seeds, cover them, and pack the soil at one operation. The drills can be regulated to sow at various rates at the depth desired. By regulating the rate of seed sowing thinning can be reduced to a minimum. Thinning should be done early to prevent overcrowding of seedlings which can result in spindly plants competing with each other for nutrients.

*Transplanted Crops:* Seed is usually sown in seed boxes or in nurseries and seedlings transplanted once or twice. There are two main methods:

*Local peasant method:* Raised seed beds about 3 - 4ft. wide and 1ft. high are made in the open. A small amount of manure is incorporated in the surface after a fine tilth is produced. Seed is sown by broadcasting thinly or preferably in furrows across the bed. It is then covered lightly with *fine soil* and finally with *dry grass* or *palm leaves* etc. to prevent drying out. The cover is removed after germination takes place. Seedlings are then thinned to give an average spacing of 3" x 3" when plants are 1½" tall.

*Greenhouse method:* Seeds are sown in seed boxes. The mixture used for boxes comprise 2 parts sterilized soil, 1 part coarse sand (about  $\frac{1}{8}$ " particles) to 1 part coconut coir fibre, with the addition of  $\frac{3}{4}$  oz. superphosphate,  $\frac{3}{4}$  oz. potassium nitrate ( $KNO_3$ ) and  $\frac{3}{4}$  oz. hydrated magnesium sulphite or a standard fertilizer. The mixture is sterilized by steam or some commercial sterilizer. It is essential that seedlings are well watered but not over-watered. It is desirable to apply Startrite at the rate of 2 oz. per gallon to seedlings and plants should be sprayed with an insecticide and fungicide occasionally.

Seedlings are transplanted when they attain satisfactory size. It is advisable to apply chlordane at the rate of 2 lbs. per acre to the area ten days before transplanting to reduce mole and cutworm attack. The area should be irrigated before transplanting.

#### CHEMICAL WEED CONTROL

Weed control in vegetable production can become a problem during the cultivation of the crop, particularly during wet season production.

Weed killers or chemical weedicides are often cheaper to use than other methods of weed control. Their use can reduce the cost of labour involved.

Weed killers can be classified into three main groups:

1. Contact foliage
2. Systemic foliage
3. Soil-acting or residual.

1. *Contact foliage:* They kill young growth such as shoots, e.g. of both grasses and broad leaf weeds. If weeds are well established

when the contact foliage-weedicide is applied regrowth of the weeds would take place. Contact sprays act like cutlassing. They are quick acting; rain after ten minutes or so does not interfere with their effect. All are more effective on young weeds and give better results on softer growth. When applying to weeds in crop the sprays should be directed away from young tender crop growth or a shield could be used. Crops with a hard bark, e.g. tree crops, such as cocoa, coffee, citrus, established pigeon pea or cassava, or those with protective sheaths such as bananas are not affected as long as the spray is kept off the leaves.

*Examples:* Gramoxone, Reglone and oil.

2. *Systemic foliage:* When sprayed on to the foliage of leaves the chemical travels throughout the plant from the leaves throughout shoot down to the roots. With systemic foliage sprays regrowth from roots is prevented and new weed growth occurs mainly from seeds in the ground. Systemic sprays are usually selective in that they are specific in controlling either grass weed or broad leaf weeds, not both. The best time to spray annual and seedling perennials is when they are under 1ft. in height.

These chemicals are slow acting and it may take several weeks for their full effects to show up. Heavy rain within half to one hour of spraying will generally decrease their effectiveness.

*Examples:* Dalpon, Kuron, MCPA, Propanil, Tordon, 2,4-D, and 2,4,5-T.

3. *Soil-acting or residual:* These chemicals are used to control weeds on road paths, and drains for up to one year if applied in large quantities. If applied at lower concentrations they can be used in most crops to give control for one to three months. They are very effective on annual weeds. They will kill many



established weeds but all the compounds give better results on established weeds if mixed with contact, or systemic foliage spray. Moist soil-acting weed killers should only be applied when the ground is damp.

*Examples:* Amiben, Ametryne, Diphenamid, Dybar, Eptrin, Gesaprim, Glenbar Hyvar-X, Karmex, Torax, Tok, Prometryne, Semazine, and TCA.

Selective weed killers are chemicals that kill weeds but do not injure the crop. There are selective weedicides for both monocots and dicots.

There are two main methods employed in chemical weed control: Pre-emergence and Post-emergence applications. In post-emergence application selectivity must be considered or vegetable plants will be killed as well as the weeds.

## CANDI NEWS

At the second Annual Meeting of the Caribbean Association of Nutritionists and Dietitians held in Jamaica in June 1974, the following members were elected to the Board of Directors for 1974 to 1975.

### *Executive Committee*

- Miss Patricia Peña, Ministry of Health, Barbados (President)
- Miss Julia Rose, Ministry of Health, Trinidad (Vice-President)
- Mrs. Versada Campbell, Scientific Research Council, Jamaica (President Elect)
- Mrs. Glenora Slimmon, CIDA Advisor, Barbados (Secretary)
- Miss Carol Wilkes, Ministry of Health, Trinidad (Treasurer)

### *Standing Committee*

- Miss Brenda Davis, Princess Margaret Hospital, Nassau, Bahamas (Nominating)
- Miss Doreen West, Ministry of Health, Trinidad (Admissions)
- Miss Carol Wilkes, Ministry of Health, Trinidad (Finance)
- Miss Alison White, Ministry of Education, Trinidad (Nutrition)
- Miss Eunice Warner, Ministry of Education, Trinidad (Education)
- Miss Ena Walker, Ministry of Health Guyana (Public Relations)

### *Regional Representatives*

- E. Griffin, Antigua - 1973-1975
- M. Guda, Surinam - 1973-1975
- W. Davis, Jamaica - 1973-1975
- S. James, Bermuda - 1973-1975

E. T. Abbott, U.S. Virgin Islands - 1974-1976

M. Floissac, St. Lucia - 1974-1976

V. Horsham, Montserrat - 1974-1976.

At this time, the following resolutions were passed:

1. Diabetes, hypertension, PCM and obesity having been identified as major health problems in the region, be it resolved that dietitians re-evaluate their present functions to enable them to play a more active role in the management of the above conditions:
  - (a) Through closer collaboration with the public health team;
  - (b) Through more involvement with the dietary treatment and related aspects of therapy;
  - (c) Through delegation of non-professional duties to trained food service supervisors or other appropriately trained personnel.
  
2. The Conference recognises the need for nutritionists and dietitians in the Caribbean to keep abreast of new and locally relevant knowledge. Be it resolved:
  - (a) That CFNI be asked to conduct a seminar or a series of seminars as deemed appropriate for this purpose;
  - (b) That Governments of the region support continuing education activities in order to ensure a high level of professional competence.
  
3. Because of the development of new cadres within the disciplines of nutrition and dietetics, be it resolved:
  - (a) That the required qualification and role of each level of personnel (professional and sub-professional) be identified and that these be made available to Governments.

4. In view of the importance in today's world of Caribbean territories becoming more self-sufficient in food supplies in order to ensure that the satisfaction of nutritional needs is not dependent on overseas influences, be it resolved:

- (a) That each territory give priority to the formulation of a Food and Nutrition Policy and programme to implement such a policy.

The CANDI executive has been busy ensuring that action is taken on these resolutions. The Education Committee has been charged with the responsibility of executing Resolution No. 3, and an initial request for CFNI's assistance in conducting an in-service seminar for CANDI members (Resolution No. 2) has been forwarded to Dr. R. Cook, Director of CFNI. It is expected that individual territories will pursue the matter.

The Third Annual Meeting scheduled for June 26 and 27, 1975 in Guyana, will now be held in Trinidad. Among topics to be discussed are: The dietitian as a manager, Identifying the roles of the dietary team, Community nutrition, Consumer education, Current management of gastrointestinal disorders, Reports on dietary allowances for the Caribbean and manpower survey, and Guidelines for food and nutrition policy.

**THIRTEENTH PACIFIC SCIENCE CONGRESS 1975**

The Thirteenth Pacific Science Congress will be held August 18 to August 29, 1975 in Vancouver. Although the program, which includes Population, Aquatic Resources, Energy, Land-Based Resources, Nutrition, and Science and Social Science Policy is primarily concerned with the Pacific Rim countries, much of it may be of interest to readers of 'Cajanus'. There will be four days of nutrition programs (August 25-29). We would like to invite nutritionists to attend the program and, if possible, submit abstracts for the sessions of contributed papers.

The nutrition sessions are tentatively planned to be as follows:

Plenary Lecture: Dr. J. M. Bengoa

Symposium I: "Food Resources in the Pacific Rim"  
Drs. M. Ganzin, G. Borgstrom, J. Bulatao-Jayme,  
F. Sevele and S. J. Wookey.

Symposium II: "Urbanization and Nutrition"  
Drs. G. J. Brisson, C. Intengan, J. Biddulph,  
J. H. Hankin, and D. D. Prawiranegara.

Symposium III. "Nutrition and Disease in the Pacific"  
Drs. I. A. M. Prior, M. Behar, G. Inoue,  
G. Loison and P. Pangkatana.

Symposium IV: "Maternal and Child Health"  
Drs. M. Lee, E. H. Hipsley, D. B. Jelliffe,  
L. A. Malcolm and F. Monckeberg.

There will be four afternoons of contributed papers.

Contributed papers should be approximately ten minutes in length and should relate to one of the symposium topics. Abstracts should be sent to:

Dr. W. S. Hoar, Secretary-General, Thirteenth Pacific Science Congress, 2075 Wesbrook Place, University of British Columbia, Vancouver, B.C., V6T 1W5, Canada.

Information regarding registration, programs, and special events can be obtained from the same office.



PACIFIC SCIENCE  
ASSOCIATION

## FROM THE EDITOR

*SURVIVAL THROUGH COMPASSION*  
By Halfdan Mahler\*

Is man doomed to perish in the turbulent wake of technological progress? Or is man not the unique species of animal that is capable of ensuring his own survival when his existence is most threatened?....Perhaps future historians - if, indeed, there is a future - will single out the Twentieth Century as the period when for the first time man could, without discrimination, have demonstrated a collective human compassion toward everybody on board Spaceship Earth. Or, some historian from another planet, viewing the ruins, may conclude that this was the century in which earthman, tragically believing for the last time in his own impunity, failed to meet the challenge to his survival. Most of today's international conferences are, in my humble opinion, living evidence of this very unwillingness of man to meet the challenge for survival through compassion.

In my strictly personal opinion this has a good deal to do with the tendency to propound the equation that technological resources plus economic resources equal man's total resources. Nothing could, in my opinion, be further from the truth. However important econometrics appear to be, let us not forget that history has often witnessed a very weak correlation between economic growth and social well-being; that, furthermore, developmental miracles of past and present history have occurred in the face of economic adversity when man's limitless energy and creativity have been fully realized and utilized.

But man's ability to generate energy and creativity depends upon his health. I would like to emphasize health as something quite apart from conventional medical wisdom's obsession with the curing of disease and the postponement of death. Indeed, health is nothing less than the highest possible quantum of physical, social, and mental well-being.

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\*Dr. Mahler is Director-General of WHO. This is an extract from his speech, at the 26th Meeting of the Regional Committee of WHO for the Americas, (1974).

*...the optimal level of health for everybody, as a human right, is hardly brought about by fighting a losing battle against the deaths of a selected few, however compassionate this may superficially seem....*

*An agonizing reappraisal of what health is all about, on the other hand, can lead to success if we uncompromisingly accept health as a universal human right without political, geographic, economic, and social discrimination. Nothing less than national, regional, and global health crisis councils will be needed to change our traditional reflexes and to jolt us from lip-service into action. Should this happen, I believe that those of us who have the privilege to work in the health sector could make a distinct contribution toward a new economic and social order for a more decent world.*

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## TOPICS AND COMMENTS

*DOULAS, CONFIDENCE, AND THE SCIENCE OF LACTATION\**  
By D. B. Jelliffe and E. F. P. Jelliffe

More than a century ago, in 1847, the novelist Trollope drew attention to the apparent paradox of the commonness of lactation failure in well-fed upper socioeconomic women when he commented: "How is it that poor men's wives, who have no cold fowl or port wine on which to be coshered up, nurse their children without difficulty, whereas the wives of rich men, who eat and drink everything that is good, cannot do so, we will for the present leave to the doctors and mothers to settle between them." Recently, very important advances have been made in the psychophysiology, endocrinology, and social anthropology of human lactation, which not only help to explain many, if not most, failures in well-nourished women, but also give practical guidance to make success likely for the majority.

From the point-of-view of infant feeding, successful lactation is the result of reflex interactions between the nursing couple or dyad, that is, the newborn and the mother. On the baby's side, these interactions comprise the rooting, sucking (or more correctly suckling), and swallowing reflexes. In addition, the mother supplies to this interaction the prolactin reflex, by which this hormone is secreted into the circulation as a result of stimulation of the nipple and areola by the nursing baby. This is the main mechanism for milk secretion into the alveoli.

Of even greater importance is the rather inappropriately labeled "let-down reflex," certainly better termed the "milk ejection reflex." By whatever name, this is a psychosomatic reflex and is the main key to success or failure in lactation. The somatic component is similar to that of

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\*This article is reproduced, with permission, from the *Journal of Pediatrics*, 84 (1974), 462-464. The original article contained twenty-nine references. We will gladly send these to any reader who requests them. As many readers will know, Professor Jelliffe is a one-time Director of CFNI and Mrs. Jelliffe was once a staff member.

the prolactin reflex in that impulses pass, probably via branches of the bloodstream back to the breast. Here contraction of the myoepithelial cells surrounding the alveoli occurs, leading to expulsion of the milk from the alveoli and its "ejection" or "let-down" into the terminal lacteals. Of major importance, however, is the fact that this reflex can be inhibited by anxiety, uncertainty, or other forms of emotional tension. Indeed, this has been well known for centuries; for example, the "breast dries up" if a mother hears that her husband has been killed, as well as village dairy farmers in many parts of the world appreciate that less milk is obtained from a cow by an unfamiliar milkman.

Investigations with newly developed radioimmunoassay techniques have shown that prolactin secretion is proportional to the stimulation of the nipple and areola, that is, with the amount of sucking by the baby. It follows, therefore, that any unnecessary interference with the frequency and length of time spent sucking in the neonatal period and early weeks of life needs to be viewed critically to assess its usefulness versus its interference with sucking stimulation and hence prolactin production.

With the modern scientific knowledge available, there are many aspects of what may be perhaps termed orthodox Western maternity rituals which are currently under critical reassessment, including, for example, the over sedation of the newborn (as a result of maternal anesthesia), the use of so-called prelacteal bottle feeds, and the separation of mother and newborn baby. All of these factors, apart from anything else, seriously limit the amount of sucking time.

Confidence is the key in regard to the let-down reflex. Recent careful sociologic studies by Dr. Alice Ladas on women attending the LaLeche League International groups have clearly demonstrated that in a Western society in which the breast-feeding pattern has been disrupted to some degree for one or even two generations, such confidence can best be produced by supplying accurate, up-to-date, relevant information and by giving individual and group support.

Paralleling this work, Dr. Dana Raphael has carried out an analysis of the behavior of social mammals, such as dolphins and elephants, and of customs in traditional human societies, including the Western world until recently, in relation to childbirth and the neonatal period. As a result, she has drawn attention to the fact that it is usual for one or more individuals, usually a female, to be available to assist during the pregnancy, childbirth, and neonatal period. This individual, termed by Raphael a *doula* (from the ancient Greek word for female assistant), supplies traditional information and gives physical help and emotional support. For example, in rural India a girl is brought up surrounded by breast-feeding relatives and learns by cultural osmosis that this is the normal way to behave. She gains intimate knowledge of the art of breast-feeding subconsciously by observation, and she learns how to handle babies by caring for younger siblings. In addition, during later pregnancy, childbirth, and the neonatal period, traditional cultures have *doulas* to assist in this time of psychosocial and physiologic transition. In some parts of India there are two *doulas*. For example, during later pregnancy, a young woman moves to stay with her own mother, who acts, therefore, as a *doula*. In turn, she is reinforced by a second *doula*, the traditional midwife (*dai*), who not only helps with the delivery, but also with the ritual seclusion wisely prescribed by this culture for some weeks after the birth. During this time, the mother can rest and become adjusted to the baby and her new role, and breast-feeding becomes firmly established.

By contrast, in modern industrialized Western-type societies, the young woman often receives little information on breast-feeding during childhood, particularly from observation, but is bombarded with formula advertising. Also, with the often geographically widely separated nuclear family, the information obtainable from older female relatives, as well as the routine in maternity units, frequently have what may be realistically termed an "antidoula" effect, as far as supplying the information and support that is so necessary. Likewise, in modern practice the mother is often returned rapidly and prematurely to her full responsibilities at home, including looking after the rest of the family.

It seems certain many of the practices in routine Western maternity hospitals have, until recently, been such that they tend to increase the mother's anxiety, and certainly are not geared to enhancing the prolactin and let-down reflexes. It is not surprising, therefore, that, even in mothers who wish to breast-feed, success may be elusive. In fact, such groups as the LaLeche League International in the United States, the Nursing Mothers' Association in Australia, *Ammenjhjelp* in Norway and the National Childbirth Trust in the United Kingdom act as doula-surrogates for mothers who wish to breast-feed. In fact, with the increasing modern, scientific evidence of nutritional, economic, biochemical, anti-infective, anti-allergic, and contraceptive advantages of human milk and accompanying benefits to natural mother-child interaction from breast-feeding, nursing is becoming increasingly recognized by educated younger women as much more than "a viable option."

Modern knowledge concerning the psychophysiologic factors responsible for successful prolactin and let-down reflexes mean that, in fact, successful lactation can be achieved in the majority of women with minor no-cost modifications of procedure during pregnancy, childbirth, and the newborn period in maternity units.

CAJANAQUOTE

*"Hunger never saw bad bread."*

*Benjamin Franklin (1706-1790)*

*INCAP IS TWENTY-FIVE YEARS OLD\**

It has been said, and rightly so, that scientific institutions rarely flourish to the point of achieving high international standing in a developing region. But this has indeed been the case with the Institute of Nutrition of Central America and Panama (INCAP). Its efforts over twenty-five years in behalf of improved nutrition for the peoples of Central America in particular and the entire Hemisphere in general have gained it a worldwide reputation of which all the Americas can be proud.

The decision to establish the Institute was taken in 1946 by the Governments of Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, and Panama, with strong support from the Pan American Health Organization and the W. K. Kellogg Foundation. It was not until 1949, however, that INCAP was organized and began operations at its headquarters in Guatemala City.

From the outset the Institute was entrusted with the study of nutrition problems in the Central American population (the most serious of which were protein-calorie malnutrition, vitamin A deficiency, nutritional anemias, and endemic goiter); analysis of the factors responsible for these problems; and the search for their solution. An intensive program of research was laid out. At the same time, attention was focused on preparing specialized personnel at all levels both for the Institute staff and for national nutrition programs, with a view to each country having the human resources necessary in order to carry out the activities required.

Before long it was discovered that nutrition problems could neither be understood nor solved by working exclusively within the health sector. Hence the Institute undertook to progressively expand its sphere of activity

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*\*This piece is a shortened version of "INCAP after twenty-five years" in the PAHO Gazette, Vol. 6, No. 4, 1974. We are happy to salute our older brother's twenty-fifth birthday.*

to include related matters in such fields as livestock production, agriculture, economics, anthropology, and social psychology.

Over the years INCAP has developed into an interdisciplinary technical organization devoted to research, advisory services, and education in nutrition and food science. In carrying out its work it draws on an outstanding team of highly trained professionals with long experience in its different areas of endeavor.

#### *Structure of INCAP*

There are nine specialized technical divisions: Agricultural and Food Sciences, Physiological Chemistry, Biomedical Science, Human Development, Microbiology, Food Control and Analysis, Statistics, Applied Nutrition, and Education.

The professional staff has fifty-eight specialists working in the following fields: general medicine, pediatrics, public health, gastroenterology, physiology, dietetics, biochemistry, microbiology, agronomy, food technology, human nutrition, anthropology, economics, psychology, education, statistics, communications, and library science. In addition, there is a technical and support staff of two hundred and forty, making for a total corps of two hundred and ninety-eight.

The Institute's research program is organized into the following areas: (a) food; (b) human nutrition; (c) animal nutrition; (d) nutrition-infection; and (e) growth and development.

INCAP's advisory services and assistance to the Governments are provided mainly through the Ministries of Health and are intended to tie in with the nutritional aspects of ongoing public health programs.

The Institute also works with the Ministries of Agriculture on animal nutrition and the utilization of new and different varieties of crops, with the Ministries of Education on the teaching of nutrition at all levels, and with national planning agencies on the setting of food and nutrition policies.

The Center for Advanced Study in Nutrition and Food Science (CESNA), a joint INCAP/San Carlos University undertaking, is responsible for the Institute's teaching program, which is carried out through the School of Nutrition and four graduate-level courses.

Funds for the operation of INCAP are derived from three major sources: its basic budget, PAHO/WHO contributions, and monies from the outside in the form of grants and contracts.

#### *Highlights of INCAP's Accomplishments*

INCAP can take credit for important break-throughs over the years such as:

- (1) Development of original methods of food fortification (iodization of damp unrefined salt with potassium iodate, fortification of sugar with vitamin A).
- (2) Development and practical application of the principle of combining different products to make highly nutritive, low-cost foods (Incaparina).
- (3) Nutritional improvement of traditional foods through the use of new technologies or local raw materials (pastes made with corn and legumes).
- (4) Utilization of local products and development of improved management systems for animal feeding (use of cottonseed meal in the artificial feeding of calves and for the raising of cattle in confinement).
- (5) Development and application of methods for the assessment of nutritional status (creatinine/height index, survey methodology).
- (6) Improved understanding of the pathology and treatment of protein-calorie malnutrition in children and its multiple effects (importance of chronic, slight, and moderate forms).

- (7) Effect of fetal growth on morbidity and mortality in children, on physical and mental growth and development in early life, and on physical work capacity in adults.
- (8) Development of principles and materials for nutrition education and for the teaching of nutrition at various levels.

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VEGETABLE AND FRUIT SUPPLY IN PEKING  
From the Peking Review, No. 52  
27 December 1974, p20

Every one of Peking's several million inhabitants is supplied with an average of about half a kilogramme of fresh vegetables daily. In the early days after liberation, each had less than one-third the present amount, though the city's population was two-fifths its present size. Now fruit is also in ample supply and prices are low.

Peking chiefly depends on suburban people's communes and state orchards to supply its population with vegetables and fruits. Since liberation, the city government has paid a great deal of attention to ensuring the availability of these foods by adopting appropriate measures.

Vegetable-growing bases gradually set up in more than 1,200 production teams of thirty-three people's communes are scattered around the outskirts of the city. The communes and brigades keep in touch with the needs of residents through markets in every corner of the city, organize vegetable production according to state plan and deliver supplies with due concern for quantity, quality and variety. Freshness is ensured by shipping vegetables directly to market on trucks loaded out in the fields.

In order to reduce vegetable decay and waste in the peak periods and shortages in the off-seasons, growers, commercial departments and scientific research units have co-ordinated closely in experimenting with methods of growing the same kind of vegetables in more than one season and of storing vegetables in large quantities. Now tomatoes and cucumbers are planted nine to ten times a year. Storage time for over ten kinds of vegetables including tomatoes, green peppers and onions has been lengthened considerably.

The area sown to vegetables in Peking today is five times that of 1949. Thanks to the building of extensive water conservancy facilities by the people's communes, the expansion of acreage under power-driven irrigation and the use of more chemical fertilizers, both gross output and per-unit yield have been greatly raised. This enables the people's communes to

keep up the supply of vegetables to the city even during long dry spells.

The outskirts of Peking could only produce 20,000 tons of fruits in the early days after liberation. During the Great Leap Forward in 1958, cadres went to outlying suburban areas to plant fruit trees on bare mountain slopes and banks. Large orchards were cultivated and later expanded to over 500 hectares in area. Several dozen orchards set up in the suburbs since 1958 cover a total expanse of 3,000 hectares and produce up to 125,000 tons of fruits annually. Some of the brigades in the suburban people's communes also grow fruits. Peking now produce peaches, pears, grapes, persimmons, apples and over ten other varieties of fruit. Some fruits are gathered in quantities large enough to supply not only the city but other places as well.

Peking residents now have fresh vegetables even in mid-winter from the city's 10,000 or more greenhouses. In recent years suburban vegetable farmers have experimented with the use of plastic sheets to cover their fields during the winter to grow vegetables. This has greatly increased vegetable supplies in winter and spring.

Vegetables and fruits harvested by production teams and state orchards are purchased and marketed by state commercial department under unified planning. Marketing and purchasing prices set by the state are beneficial to growers as well as to consumers. State purchasing prices remain steady when vegetables and fruits are in season and are always higher than the market prices during that period. In winter and spring state purchasing prices are raised to correspond with the higher cost of vegetable production, while boosts in market price are comparatively less. In event of losses due to natural calamities, the state subsidizes vegetable-growers to ensure that their income is not diminished because of reduced output. Whenever necessary in the course of purchasing and marketing, the state grants subsidies to guarantee city labouring people cheap vegetables and fruit, and also to lift the burden of any losses from the shoulders of the farmers. Actually, in respect to vegetables alone, every city resident receives a state subsidy of 1.5 yuan a year on the average.

## NUTRITION AND NATIONAL DEVELOPMENT\*

by

P. N. Sen Gupta

Two-thirds of the world population are undernourished, the disastrous consequence of which affects not only those who are suffering but also handicaps and delays the advance of the society as a whole. The damage done is so serious that socio-economic advance is impeded considerably while this state of affairs continues. In any social group, the children are most seriously affected. Half of them die within fifteen years of age before they have reached the productive period of life. For a sizeable portion of survivors, nutritional restriction permanently retards physical growth and mental development.

Dr. C. Gopalan as Director of the National Nutrition Institute of India reported that eighty per cent of the pre-school children in rural areas of India suffer from malnutritional dwarfism. The effect of this on individual's contribution to his society is obvious. An increasing body of evidence suggests similar relationship between malnutrition in the early years and mental retardation and such damage is irreversible. The intelligence cannot be regenerated by ingestion of nutritious foods at a later stage.

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*\*This is a shortened version of the 12th Dr. B. C. Guha Memorial Lecture given by Dr. Sen Gupta of the 62nd Session of the Indian Science Congress Association on January 4th this year. Many readers will recall Dr. Sen Gupta as a past staff member of the Caribbean Food and Nutrition Institute. His current address is 45/8/D, Moore Avenue, Regent Park, Calcutta-700040, India.*

*This original paper, which is considerably longer and more detailed than this extract, can be obtained by writing directly to Dr. Sen Gupta.*

Progressive nutritional depletion of mothers during successive pregnancies and lactation decreases the nutritional reserve of the newborn infants and increases the likelihood of their developing malnutrition in infancy. There is some evidence of the relationship between the low birth weights and low protein intake of mothers. Due to the fact that protein and amino acid composition of milk of both the well nourished and malnourished mothers are not significantly different, supplies of adequate dietary protein of high nutritional value to the mothers are all the more important since the mother's milk is the best food for the infants.

The effects of malnutrition may be summarised briefly: Malnutrition (i) limits life expectancy and reduces the number of productive years, (ii) decreases workers' productivity, (iii) lowers resistance to disease and infection, (iv) causes protein-calorie deficiencies restricting physical growth and mental development of infants and children, making them more susceptible to morbidity and mortality, (v) needs many times greater medical cost for its treatment than the cost of providing necessary nutrients and (vi) causes permanent damage to the eye and blindness due to vitamin A deficiency of the children in India and elsewhere, limiting the opportunity for their development.

#### *Malnutrition and Development*

Having given some ideas of the disastrous effect of malnutrition in our society, it is well to consider how malnutrition is impeding national development.

Many studies have shown that in many cases decline in calorie-protein intake resulted in decline in output of work. To understand the complexities of the problem of better nutrition for better development and to draw up an effective and workable programme it requires co-ordinated efforts of the economists, agriculturists, marketing experts, food technologists besides nutritionists and it needs a knowledge of ecology. The objective of economic development is to provide a reasonable living standard to all sections of the population. A nutritionally satisfactory diet, adequate in

quantity, is an essential component of good living. At the same time improvement in the nutritional status in a large country as India can be best considered in the context of social and economic development.

Undernourished people form an unstable base for development. Nutrition promotes good health which is essential to productivity for orderly social and economic development.

Looking from the viewpoint of the development planners, nutritional upliftment is taken as a welfare issue and is rejected automatically in budgetary allocation since welfare programs are generally not considered in the national development programmes. Attempts have also been made to justify the relationship of nutrition to national development in traditional economic terms meaning national per capita income. It is understandable that the developing economies are not likely to improve in the near future but it is within the power of public policy to improve the levels of nutrition, particularly at the lower income levels. Undernutrition is only one of the several interrelated attributes of under development and therefore nutritional upliftment can only be a part of overall economic development of the nation.

Increased production even coupled with rises in purchasing power will not in a decade or two bring about a solution of the problem of protein-calorie undernutrition. The distribution between the regions and socio-economic groups will remain such that large groups of the population will still be underfed and undernourished. This will particularly affect the vulnerable groups of the population. For the great masses food costs 70-90 per cent of family budgets despite the fact that their diet is still nutritionally inadequate. Nutritionists have accomplished little in the field of planning.

Even if there is slight improvement in development plans the nutrition situation will remain critical. If the national averages of energy or protein requirements are just met, then a significant part of the population, not less than thirty per cent, will have to live on caloric-deficient or

protein-deficient diets due to uneven food distribution. It has been revealed from surveys that even in a household the best of the family food is reserved for the family head and mostly the mother is the worst sufferer. Food distribution even within the household is influenced by socio-cultural factors. The importance of good nutrition in ensuring positive health of a community is generally recognised but the extent to which undernutrition affects our national health and development has not been clearly appreciated. A large proportion of the population live below the 'poverty level' and they are unable to afford even the least expensive improved diet, not to speak of a balanced diet. It is indeed necessary, therefore, to recognise that nutritional upliftment is not an isolated program of socio-economic development.

Dr. A. H. Boerma, Director-General of FAO, deplored that "even today nutrition has not yet attained its full and proper place in the scale of priorities that guide the thinking of those who devise the policies that govern our lives. There are three main reasons why we should take another look at the relationship between economic growth, nutrition and development itself. First, nutrition is more closely linked to economic growth than is sometimes realised. Malnutrition can wreak havoc with a country's growth potential. The problem cannot wait till a satisfactory level of economic growth is achieved. Secondly, economic growth is a very uncertain measure of these levels. Thirdly, economic growth has entered too largely in our mind that we are overlooking other priorities".

Commenting on the problem of malnutrition in a two-tier world, Dr. M. S. Swaminathan, Director-General of the Indian Council of Agricultural Research, rightly asserted that the paradox of nutrition in this compartmented world is that malnutrition among the poor peoples of the developing countries is increasing at the same time as the realisation of the importance of nutrition in development. Malnutrition especially in childhood is thus doing both short and long term damage to development in the poor countries, and this is likely to be a major factor in perpetuating the differential rate and pattern of economic growth in the developed and developing world.

### *Economic Aspect of Food and Nutrition Planning*

In connection with the large proportion of cases of protein-calorie malnutrition, it has been observed that food distribution is not only a matter of storage and transport. It is primarily purchasing power; poverty is the main cause of malnutrition which exists in some form in different groups of population in all the developing countries. Even if adequate food supplies are available they may not be eaten. Effective food and nutrition planning must start from the consumer. First to identify whose intakes are inadequate and why? We need to know how we can improve poor diets by alternative means.

Similarly it is necessary to explore all avenues for increased food production, otherwise how can the people of a predominantly agricultural country attain higher purchasing power?

It is also necessary to look to the *qualitative* aspect of the diet as well in planning for increased food production. One can make a physiological distinction between quality and quantity of food. Both are important and both are inadequate. The calorie side of malnutrition coincides with the agricultural objective to which most developing countries are pledged but the qualitative side of the problem is a different story. Many countries including USA are demonstrating that calorie sufficiency is no answer to malnutrition. One may visualise a time in the near future when calorie inadequacy shall have been much reduced while serious nutritional deficiencies remain. It will be serious negligence in the responsibilities if the planning authorities awaited the day of cereal adequacy before awakening to the additional needs.

### *Food and Nutrition Policy in Planning*

A food and nutrition policy is defined as "a complex of educational, economic, technical and legislative measures designed to reconcile the food demand, forecast food supply and nutritional requirements". A food and nutrition policy is an integral part of national economic development plans.

For the establishment of such policy and for planning of supplementary feeding schemes and other nutrition programmes some basic information are to be obtained through comprehensive and well planned household food consumption and budget surveys in stratified samples in order to obtain direct answer as to which of the socio-economic groups both in urban and rural residences are nutritionally deficient and why? This basic information is indispensable.

Rapid population increase implies an equally rapid increase in the total demand for food. This demand is likely to be different in that section dependent on purchased food from the other dependent on its own production. The crucial problem is not just a matter of increasing food supplies but to ascertain whether the food supplies are met by effective demand.

Approaching the question of agricultural production from the standpoint of consumption is a fruitful technique to meet the deficiency of agricultural production statistics as well as to check the nutritional consistency in the projected food production plan targets. Even in India, the production statistics of 'protective foods' such as, vegetables, fruits, milk, eggs, fishes and meat are scanty. The consumption of food expressed in weights is difficult to interpret since different food materials in varying proportions constitute the daily diet. But like monetary units calories and protein are common units of all foods. The production and consumption data can therefore be conveniently expressed in terms of nutrient contents and be compared with nutrient requirements.

The nutritional targets in planning which should have both *qualitative* and *quantitative* functions are dependent on various factors. These targets are of little value to food planning until they are translated into the kinds and quantities of food needed to achieve improved levels of nutrition. The development plans of only a few developing countries are based on nutritional improvement as one of the principal objectives. These important aspects are the feature of the Indicative World Plan for Agricultural Development (IWP) by FAO for the guidance of governments.



Views have been expressed that the problem of malnutrition is not related to food production, and it should be dealt with through economic development. Views have also been expressed that there is no need to look to the protein problem so long the caloric deficiency is met. These two views seem to be contradictory. However, FAO in adopting a new strategy for improving nutrition realise that food production, marketing, effective distribution and consumption are the relevant factors which represent one single system. Thus, if the improvement of nutrition is accepted as a prime objective within national development goals, nutrition will have to become an integrated planning component, and augmentation of food production should also be one of the primary objectives.

Caloric deficiency can only be met by adequate food supplies but if the per caput food production is low how can such additional calorie supplies be possible? In many developing countries, seventy per cent of the population are farmers and are dependent on agriculture for their economic improvement. Unless they have increased income from their land, how can they buy extra food and where from will such supplies be available?

#### *Conclusion*

I have taken much of your patience to bring your attention to the problem of nutrition in relation to national development particularly stressing that nutrition should no longer be taken as welfare programmes since its importance in relation to the progress and development of the country has been adequately established. I have attempted to explain how mal- or under-nutrition is impeding economic growth in various ways and to emphasise the necessity of undertaking efficient food and nutrition policy planning, particularly in relation to population growth, nutritional requirements, food supplies, food conservation and the need for revised workable demand targets on the basis of *improved diets*.

Before I conclude it would be appropriate to quote again from the keynote address of Dr. A. H. Boerma, Director-General of FAO at the First Asian Congress of Nutrition held in Hyderabad in 1971: "The ultimate aim of

development must surely be the improvement of what is increasingly coming to be known as *quality of life*. And this is something which cannot be achieved by economic growth alone especially not economic growth as measured by national per capita income. The progress of development must be humanised because only development with a human face can appeal to humanity at large." 0

CAJANAQUOTE

*"In war, battles can only be fought one by one and the enemy forces can only be destroyed one by one. Factories can only be built one by one. The peasants can only plough the land plot by plot. The same is even true of eating a meal. Strategically, we take the eating of a meal lightly - we know we can finish it. But actually we eat it mouthful by mouthful. It is impossible to swallow an entire banquet in one gulp. This is known as a piecemeal solution. In military parlance, it is called wiping out the enemy forces one by one."*

Mao Tsetung

*Speech at the Moscow Meeting of  
Communist and Workers' Parties,  
November 18, 1957.*

## GAMES IN NUTRITION EDUCATION

*by**Ruby King\**

Nutrition education should form a part of the basic education of all persons in all societies. Perhaps the foremost objective of nutrition education is to persuade people to adopt and practise good nutrition habits. Since learning on the part of students does not necessarily take place on the receipt of instruction from the teacher, nutrition educators like all other educators need to adopt educational approaches and strategies which will best promote learning. Teacher - talk is largely ineffective where the objective is to bring about changes in habits or behaviour. If it is accepted that people learn best by doing, it follows that the impact of nutrition education programmes can be strengthened by the use of methods which provide for the active and direct participation of all the students.

The study of nutrition lends itself to a wide variety of approaches and strategies. Storytelling and live drama, exhibitions and displays, the use of models, realia, cartoons, flashcards, posters, charts and flannel-graphs can add variety and interest to the teaching of the subject. These and other activities and teaching aids can be used by the creative teacher to provide effective learning experiences. These experiences will help to arouse and maintain interest and can also be used to introduce, teach and reinforce concepts and skills related to the subject.

Another activity which can be very exciting as well as instructionally profitable, is the involvement of students in games. Many popular games such as dominoes and bingo, can, with a little ingenuity, be adapted and used in nutrition education classes or sessions.

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\*Mrs. King is from the School of Education, University of the West Indies, Mona.

*The Good Food Game*

*(A copy of this game is slipped into this issue of 'Cajanus')*

This game is an adaptation of the game of Snakes and Ladders. It can be used with adults and with children to:

- (1) Arouse interest in the study of food and nutrition.
- (2) Introduce concepts related to health and nutrition.
- (3) Reinforce and consolidate concepts already taught.

*How to Play the Game*

- (1) The game can be played by one, two, three or four people. Each player needs a counter. This may be any small object such as a button. The players will also need a dice.
- (2) The order of play is arranged by the players.
- (3) Each player throws the dice and moves his counter forward according to the number scored on the dice.
- (4) When the counter lands at the foot of a ladder, it should be moved to the top of the ladder and the player is entitled to another throw of the dice.
- (5) If the counter is moved on to the head of a snake, it must be moved into the square occupied by the tail of the snake.
- (6) The first player to reach square 100 wins the game. To reach this square, the exact number required must be scored. If an excess is scored, the counter is moved in to the home square and the player counts backwards the excess number scored.

*Getting Further Mileage from the Game*

In addition to asking students to play the game, the teacher can use it to stimulate a number of other activities. Students may be asked to:

- (1) Review the nutritional messages which the game conveys

and make lists of the factors which promote good health and those which cause poor health.

- (2) Have small group discussions on other factors or actions which lead to good or bad health and change the words on the game to include some of these ideas.
- (3) Make posters or sketches to illustrate some of the ideas they learned from the game.
- (4) Make cartoons to illustrate the effects of poor nutritional habits.
- (5) Write a short skit to illustrate an idea they learned from the game.
- (6) Make individual lists entitled "Other things I would like to find out about nutrition", carry out the necessary research and make reports to the class.
- (7) Write a short essay entitled "A balanced diet".
- (8) Write a song to the tune of a popular folk song or round to illustrate a nutrition idea.
- (9) Have a class debate on the moot "Good health is better than wealth".
- (10) Write a short story with the ending "David promised his mother that he would never miss breakfast again".

The teacher or nutrition educator will be able to think of other games and activities which can convey or reinforce nutrition ideas. In deciding on an activity it is always wise to take into account the age, aptitude, interests and attainment level of the students. Also to be taken into account are the stage in the study when the activity will be used and the objectives of the study.

It is hoped that these ideas will be of some use to those engaged in nutrition education and will give rise to other ideas which will strengthen the impact of their educational activities.

## FOOD LEGISLATION IN SIX CARIBBEAN COUNTRIES\*

by

*J. A. Campbell*

One of the chief functions of the Institute consists of furnishing assistance to Caribbean Countries in the development of their food and nutrition policies. A very significant factor in this development is the status of their food control, i.e. their existing legislation and the enforcement of it. Properly enforced food legislation ensures that the food supply of a country is free from harmful substances and filth, that it is not adulterated and that it is processed under sanitary conditions. It should assure the consumer that the food contains no harmful additives, contaminants or bacteria and thus reduce the likelihood of infection and sickness. It should also assure him that food is informatively labelled, and that advertising claims are not exaggerated. As such, it constitutes an important part of food and nutrition policy.

It is the purpose of this report to review the pertinent acts and regulations, and the resources available for the administration and enforcement of food legislation in the following states: Trinidad and Tobago, Jamaica, Barbados, Guyana, St. Lucia and St. Christopher, Nevis and Anguilla. An attempt will also be made to identify needs that exist.

*TRINIDAD AND TOBAGO**I. The Act*

The sale of food is governed by the Food and Drugs Ordinance, 21 May 1960, which was enacted by the Governor of Trinidad and Tobago with the advice and consent of the Legislative Council.

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\*From a paper prepared for the Caribbean Food and Nutrition Institute Policy Committee Meeting, held in Barbados, 4th and 5th December 1974.

The Ordinance consists of several parts: Definitions, general provisions, sections relating to foods, drugs, cosmetics, devices, administration and enforcement, and three schedules.

Pertinent definitions are as follows:

Food "includes any article manufactured, sold or represented for use as food or drink for man, chewing gum, and any ingredient that may be mixed with food for any purpose whatever".

Advertisement "includes any representation by any means whatever for the purpose of promoting directly or indirectly the sale or disposal of any food, drug, cosmetic or device".

Sell "includes offer for sale, expose for sale, have in possession for sale, and distribute".

In the general section, it is set out that the Minister may require any person carrying on business in foods to furnish details regarding the composition and use of substances employed.

It is also required in this section that any person who advertises or sells a food to the general public for the treatment, prevention or cure of diseases and disorders listed in the First Schedule to the Ordinance shall be guilty of an offence. This Schedule includes diseases or conditions such as obesity, sexual impotence, heart disease and goitre.

In the food section it is stated that a person is guilty of an offence if he sells an article of food which:

- (a) contains any poisonous or harmful substance;
- (b) is unfit for human consumption;
- (c) consists of filthy or putrid substances;
- (d) is adulterated;
- (e) was manufactured or stored under unsanitary conditions.

A person is also guilty of an offence if he "labels, packages, treats, processes, sells or advertises any food in a manner that is false, misleading or deceptive or is likely to create an erroneous impression regarding its character, value, quantity, composition, merit or safety.

Where a standard has been prescribed for a food it is an offence to package or sell a food in such a manner as to be mistaken for the standardized food unless it complies with the standard.

For the administration and enforcement of the Ordinance, provision is made for the appointing of analysts and inspectors. Powers of analysts and inspectors are set out and relate both to locally produced and imported food.

The Ordinance also provides that the Governor in Council may make regulations for carrying the purposes and provisions, but not so as to restrict the generality, of the Ordinance into effect.

The Ordinance states that offences under the Ordinance may be instituted, tried and determined in the place where the offence was committed. Subject to certain provisions, the accused may be acquitted if he can prove that he purchased the article from another person in packaged form and sold it in the same package and in the same condition as purchased.

The Ordinance also covers the use of certificates of analysis, proof of offence and related matters. Where a person is prosecuted under the Ordinance for manufacturing an adulterated food, the onus of proving that it was not adulterated is on the accused. Any article commonly used for human consumption shall, if sold, be presumed, until the contrary is proven, to have been sold for human consumption. No food may be imported into Trinidad and Tobago unless it wholly conforms to the law of the country in which it was manufactured and is accompanied by a certificate which specifies this.

First offences under the Ordinance are punishable on summary conviction by a fine of \$500 or three months imprisonment or both. For conviction by indictment the fine is \$5,000 and imprisonment is three years.



## II. The Regulations

Food and Drug regulations were promulgated in 1965 by the Governor General under Section 25 of the Food and Drugs Ordinance 1960 as Government notice 30. Part I contains general provisions and definitions and Part II relates to the labelling and packaging of foods.

The food regulations have subsequently been amended in 1969, 1972 and 1974. In these amendments, new definitions have been added including items such as food additives, food colour, ingredient listing, expiration dates and batch number.

## III. Enforcement

The legislation is administered by the Chemistry/Food and Drugs Division of the Ministry of Health. The Chief Chemist/Director of Food and Drugs also serves as *ex officio* chairman of the Food Advisory Committee which is a statutory committee established under Section 26 of the Ordinance "to assist and advise him with respect to food standards, labelling and other matters connected with the manufacture and distribution of foods in the interest of, and for the protection of, the public health".

Two other professional officers of the Chemistry/Food and Drugs Division are also *ex officio* members of the Committee. The other members represent the relevant lay and professional interests and include the Chief Medical Officer (or his representative); the Specialist Medical Officer, Nutrition and Metabolism; a Country Public Health Officer; the Chief Trade Officer, a Food Technologist from UWI and representatives of the Federation of Chambers of Industry and Commerce, the Consumers Association, the Labour Congress and the Manufacturers Association.

The Chemistry/Food and Drugs Division is responsible for industrial analysis, forensic analysis and food and drugs analysis. For the last function there is an analytical section with three chemists, one microbiologist and support staff. There is also a well defined Inspectorate.

JAMAICA

I. The Act

As of October 1974, the following describes the situation existing in Jamaica.

The sale of foods is governed by several Acts and Regulations.

1. The Food and Drugs Act of 1964 is an Act relating to foods, drugs, cosmetics and therapeutic devices. This is almost identical in scope and principle to that of Trinidad and Tobago and includes provisions for making regulations within the scope of the Act. It covers such items as: Prohibition of advertising food for treatment or prevention of disease; imported foods must conform to laws of country of origin; prohibits sale of food which is harmful or filthy; and prohibits false labelling and advertising. It is presently being revised and brought up to date for early consideration by government.
2. The Processed Food Law, 1955 relates particularly to processed foods. It includes any food that is manufactured or processed for export or for which grade standards have been proposed. It contains provisions relating to the registration of establishments, their inspection, the food used and the labelling applied. It provides for the appointment of analysts and inspectors and for the promulgation of regulations. It also includes procedures for the services and disposition of food and a list of offences with penalties and requirements for presenting evidence.
3. The Standards Act, 1968 (Act 57 of 1968) is concerned with the standardization of commodities, formulation of specifications, registering of standard marks, calibrating instruments, educational work and inspection.
4. The Coconut Industry Aid Law prohibits the importation of edible oil except under licence by the Coconut Board. It contains authority to make regulations.

5. The Public Health Law 18 of 1925 deals with sanitary aspects of food processing and dispensing establishments and is administered by Public Health Inspectors of the Ministry of Health and Environmental Control.

## II. *The Regulations*

Regulations may be promulgated under several Acts as follows:

1. *The Food and Drugs Act of 1964*

Under the proposed revision of this Act, new regulations are being developed on a variety of foods and includes labelling, additives and contaminants. This seems to constitute an overlap with the Processed Food Law.

2. *The Processed Food Law of 1955*

Under this law the following specific sets of regulations have been promulgated:

1. The Processed Food (Establishments) Regulations, 1958, relating to specifications for food plants.
2. The Processed Food (Canned Fruits and Vegetables) Regulations, 1959, quality for Fruits and Vegetables.
3. The Processed Food (Prepared Syrups) Regulations, 1973 relating to the composition of syrups.
4. The Processed Food (Grades and Standards Amendments) Regulations, 1972, relating to a variety of foods and setting out standards of quality and composition.
5. Draft Regulations under the Processed Food Law are being prepared on food additives and a wide variety of foods such as coffee, honey, pastas, poultry products.

3. *The Standards Act of 1968*

A draft set of Regulations has been prepared entitled "The Standards (Labelling of Processed Food) Regulations 1974". It deals with all

aspects of the subject and relates to a wide variety of foods.

4. *The Coconut Industry Aid Regulations*

These regulations are concerned mainly with the manufacture and trade of edible oils to protect or develop the coconut industry.

5. *Public Health Law of 1925*

Under this Law are sanitary requirements for the processing of meat and milk, sale of food and water and related areas.

*III. Enforcement*

The enforcement of food legislation in Jamaica is a rather complex matter. Labelling aspects are covered by the Food and Drugs Act, The Processed Food Law and The Standards Act. Food additives are a concern of the first two Acts. False claims are a concern of the Food and Drugs Act and the Standards Act.

Responsibility for enforcement is also rather complex. Health considerations are obviously a responsibility of the Ministry of Health and Environmental Control. Until 1974, however, there were no regulations on foods under the Food and Drugs Act. These are presently being developed. The Bureau of Standards is responsible for food standards and for processed foods. Its first priority is health hazard and harm but it is also concerned with fraud. Thus two agencies are apparently involved with health aspects and the Food and Drugs Act is concerned also with fraud.

At the present time the Bureau of Standards has well defined chemistry and microbiology divisions employing respectively five chemists with three technicians and three microbiologists with three technicians. In food inspection there are ten graduates and two technicians. The Government Chemist in the Ministry of Health and Environmental Control is primarily involved with drug analysis.

It is significant to note that at the recent meeting on the development of Food and Nutrition Policy for Jamaica, the problems of enforcement have been recognized and recommendations were made to:

- (1) Set up one central agency responsible for control of all aspects of food safety and quality including labeling, advertising and composition.
- (2) Make the Food and Drugs Act the enabling legislation by which the central agency will operate.
- (3) Develop a mechanism for promulgating all regulations relating to food and drugs under one law, i.e. the Food and Drugs Act.
- (4) Provide resources to ensure effective enforcement.

Plans are now being developed for a co-ordinated approach to food control and drafts of the Food and Drug Regulations, 1974 have just become available.

(Cont'd)

*BARBADOS*

*I. The Act*

The sale of food in Barbados is regulated by the Food and Drugs (Adulteration) Act of 1933 and the Health Services Act of 1969.

The Food and Drugs (Adulteration) Act is somewhat similar to the present Act in Trinidad and Tobago but has not been brought up to date to the same degree. It consists of three parts, of which Part I sets out general provisions. Part II contains provisions about specific articles of food particularly margarine and similar products which would normally be the subject of regulations because they may need to be modified from time to time. This part also stipulates that the Governor-in-Executive Committee may make regulations concerning the control of these products, but apparently not of foods generally. Part III deals with administration and Part IV with legal proceedings.

The Health Services Act, 1969 covers the field of food sanitation and health.

*II. The Regulations*

As noted above, regulations on milk, margarine and similar products have been promulgated and are incorporated into the Food and Drugs (Adulteration) Act under Section 9. Other regulations and standards are now being developed.

The Health Services (Food Hygiene) Regulations, 1969 contain specific regulations relating to the handling of food, and the operation of food business which includes not only the supply of food for sale but also the handling of food in canteens, hospitals and schools.

*III. Enforcement*

Assistance is presently being rendered by I.L.O. to the Government in the development of standards for a variety of foods.

*GUYANA*

The sale of food is governed by the Food and Drugs Act, (Act No. 12 of 1971) enacted on 9 July by the Parliament of Guyana. Its provisions are very similar to the Food and Drugs Ordinance 1960 of Trinidad and Tobago and need not be repeated here.

Draft regulations under the Food and Drugs Act are being prepared but apparently are not as yet finalized.

Legislation is enforced by the Government Analyst Department in the Ministry of Health. The staff consists of two government analysts, seven analytical scientific officers, three inspectors and fourteen support staff.

*ST. LUCIA*

The sale of food in St. Lucia is regulated by the Food and Drugs (Advertisements) Ordinance of 13 February 1961. Its scope is related largely to advertisements. There is also an Ordinance relating to Public Health of 1 January 1932 (Chapter 151, Laws of St. Lucia). Regulations may be developed under these Ordinances.

There is a recognized need for new food legislation but resources are not available at this time. Any enforcement carried out is largely in the field of public health.

*ST. CHRISTOPHER, NEVIS AND ANGUILLA*

The sale of Food and Drugs Ordinance for these islands dates from 1887 with the last amendment being made in 1921 and reprinted in 1964. The Act prohibits the mixing of injurious ingredients with foods and the sale of foods not of the proper nature, substance and quantity. There is provision in the Act (Section 33) for the promulgation of regulations or orders to fix standards of purity.

The Administrator may appoint analysts and designate any medical officer, inspector of nuisances, inspector of weights and measures, or any police constable under the direction of the Chief of Police to procure any sample for

analysis. Proceedings are described for handling offenders. False labeling carries a penalty of \$96.00.

The only regulations or orders promulgated under the Act relate to aerated waters. Mention is made in the Act, however, of standards for rum and whiskey.

The Legislation is administered by the Ministry of Health and Welfare. There is apparently no legislation or laboratory work done in connection with food standards. Staff involved in enforcement is mainly the Public Health Inspectors who inspect food handling premises, fresh meat, animal health and tinned foods. No new legislation is being developed.

#### *General Observations*

The above review of Acts, Regulations and Enforcements in the six states permits certain general observations to be made:

- (1) The status of food legislation in the six Caribbean states studied varies greatly, with some having well developed Acts and Regulations and others largely lacking them.
- (2) There is considerable advantage in terms of personnel, laboratory facilities, administration and effectiveness of control in having foods, drugs, cosmetics and therapeutic devices combined in a single act and the administration of such an act the responsibility of a single government agency. Countries where this situation does not pertain should give serious consideration to adopting the system used by Trinidad and Tobago which is patterned after the Food and Drugs Act of Canada. Under certain conditions, it may be necessary for part of the responsibility to be delegated to another agency. Any Act should be general in nature but give authority for the promulgation of regulations as required on specific foods, food constituents or any aspect of the labelling, advertising or sale of food.



- (3) There is some indication that even where adequate legislation and resources exist, the regulations are not properly enforced. This appears to apply particularly to the advertising of so-called nutritional products.
- (4) In some cases there is a lack of adequate building, proper equipment and of personnel training in newer methods of analysis.
- (5) Very little information has been published on the nutrient composition of foods from the Caribbean, raw or processed, on the additives or contaminants present, or on the enforcement activities of the various responsible agencies. The latter aspect is particularly important in improving the quality of the food supply.
- (6) Some countries because of their size will always find it difficult adequately to support an efficient food control laboratory with appropriate equipment and trained personnel. They should give consideration at an early date as to how best the necessary control be maintained, possibly by using the facilities of a neighbouring country.

### *Conclusions*

This review has demonstrated that there is need for development of many aspects of food legislation including especially the following:

- (1) An increased recognition of the importance of food control throughout the Caribbean generally.
- (2) An updating of food acts and regulations in several countries to meet present needs.
- (3) A unification particularly in Jamaica, of legislation and responsibility for enforcement under a single agency.
- (4) A strengthening of the enforcement of existing food legislation, especially labelling and advertising of nutritional supplements of various types to prevent misleading claims.

- (5) The development of more effective enforcement which would require increased assistance including:
  - (i) Consultation and advice on food control, generally and on specific aspects in particular.
  - (ii) Improved equipment for food control.
  - (iii) Staff training for scientists and technicians in control procedures, inspection procedures, and enforcement and legal aspects.
  - (iv) Improved physical facilities to house the responsible agency.
- (6) More data on the composition of foods of the Caribbean with respect to additives, contaminants and nutrients, as well as on present enforcement activities.
- (7) Development of adequate food control measures for the smaller states without the need for each state to invest large sums in sophisticated equipment and trained personnel to handle relatively very small volumes of products.

*Acknowledgement*

The author gratefully acknowledges the assistance of PAHO/WHO Country Representatives in obtaining copies of the available legislation and of representatives of the ministries concerned in furnishing additional details regarding staffing and facilities.

# NUTRITION NEWS AND OPINION FROM THE CARIBBEAN

## *THOUGHTS CONCERNING THE CARIBBEAN FOOD SUPPLY\**

*By Philip Sherlock*

### 1. *Threat of Hunger*

Hunger is rapidly becoming the greatest single threat to the stability of a number of Caribbean countries, more especially the countries of the Commonwealth Caribbean, Haiti, and possibly, the French and Netherlands Antilles.

There are a number of reasons for this - among them being:

- (a) agricultural systems traditionally designed for the production of export crops like sugar and bananas, and the importation of basic foods;
- (b) the ever-increasing cost of imported goods, including those basic to the supply of food for animals and human beings, e.g: farm machinery, stock-feed, raw materials for the local manufacture of stock-feed, and the whole range of food products for human beings;
- (c) population whose eating habits, tastes and patterns of consumption are based on the use of imported goods;
- (d) an inherited "economy of waste" even among the very poor, involving a lack of knowledge of the nutritional values of local foods and of effective methods for the production, utilization and preservation of local food-crops;

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*\*Reproduced from the Caribbean Educational Bulletin, September 1974, p11-14.  
Sir Philip Sherlock is Secretary-General of the Association of Caribbean Universities and a former Vice-Chancellor of UWI.*

- (e) retention of attitudes engendered, and fostered by, the colonial system, in which the different island economies competed with each other, and consequently, a deep-rooted reluctance to develop "complementary" economies;
- (f) high rates of population-increase, unemployment and under-employment, especially among the unskilled and landless, conditions that threaten stability at all times, but that become explosive in times of hunger - as the riots of 1935-1938 proved;
- (g) powerful labour movements that are committed to wage increases and fringe benefits but that pay little regard to productivity;
- (h) a growth of radical movements, a rejection of passive conformity and the advocacy of militancy;
- (i) far-reaching changes in the "self-concept" among the mass of the population, with aspirations for a different life-style and rising expectations in an inflationary period when the chief forces of change are beyond local control;
- (j) a tendency to see, and deal with, the situation in terms of sectional interests and political partisanship, thus weakening the sentiment of national unity which itself is of recent growth.

## 2. *Total Impact of the Threat*

The threat of hunger is total. It involves the whole community, and the whole community has to act in concert to ward it off. Government action is essential, but so are community response, community understanding, community participation.

This has a special meaning for developing countries with no earlier history of tribal or of national identity. It can be a means of engendering self-confidence, nurturing initiative, strengthening a capacity for thought

and action in national and not only in sectional terms. In brief, the total nature of the threat can be used to evoke a total response from the diverse Caribbean communities.

### 3. A Total Response

There are many aspects to the problem:

- (a) Technical: including the critical areas of shortage; rationalization of resources; land-use systems for production; credit facilities; production; marketing; transportation; storage.
- (b) Nutritional: exploration of new sources of food, use and storage of food; emphasizing 'food for health' programmes in the whole educational system.
- (c) Educational: changing attitudes and increasing competence through popular education; the school system; the universities and related institutions.
- (d) Economic: encouraging local production of crops and of processed food at high levels of efficiency; making import-substitution effective; producing for export.

### 4. A First Step

The first essential is to focus attention on the central problem of the Caribbean food supply.

The Association of Caribbean Universities and Research Institutes is very concerned about the problem, and is anxious to contribute to its solution. As a first step UNICA proposes a CONSULTATION on the CARIBBEAN FOOD SUPPLY.

- (a) Involving persons in leadership positions in the public and private sectors and in universities (more especially those in Schools of Agriculture and Research Institutes concerned

with aspects of food production and of nutrition) -

- (b) drawn mainly - but not exclusively - from the countries of the Commonwealth Caribbean, with Haiti, the Dominican Republic, the French and Netherlands Antilles, with some participation from Venezuela, Colombia, Mexico, Florida and Louisiana (where there are UNICA member-institutions, such as CIAT);
- (c) in collaboration with some agencies such as FAO;
- (d) with the general support of a number of Caribbean regional agencies like the Commonwealth Secretariat and the Caribbean Development Bank as well as of individual governments.

The objectives being:

- A. To direct the attention of the whole community to the growing threat of hunger.
- B. To inform the Caribbean people of the facts on the basis of carefully documented objective studies prepared before-hand on such aspects of the problems as -
  - 1. Projections of the need of basic foods for the period 1975-1980.
  - 2. Projections of locally produced food supplies.
  - 3. Projections of food-importations, price-trends, and local earnings.
  - 4. Resources available in land and expertise for specialized production of basic crops and production capacity.
  - 5. Practical ways of making good the major deficiencies.
  - 6. Markets and the movement of goods.

### 5. *General Considerations*

The Consultation should be undertaken as a Caribbean initiative, and should direct attention not only to the problem but also to resources, lines of action. The meeting should be viewed as a first-step toward finding solutions by means of action in a variety of interrelated fields such as:

- (a) putting greater emphasis on agriculture and nutrition in the general systems of education at all levels;
- (b) emphasizing that Caribbean development is possible only when based on economies that are complementary rather than competitive;
- (c) highlighting efforts to increase food-production through voluntary effort in land-ownership and by means of government organization;
- (d) setting up a consultative group of Caribbean specialists in agricultural planning, production processing, storage, marketing, nutrition and transportation by drawing on the universities and research institutes as a group.

Clearly, no one meeting will transform the situation. Nor can any one institution or agency undertake a task of this magnitude. UNICA would welcome assistance from interested agencies in developing and funding some effort of the kind outlined here. It wishes also, as supplementing this effort, to use its forthcoming meetings, UNICA 4 and COLABOR TWO, as opportunities for directing attention to the problem; and it suggests the setting up of a small consultative committee to undertake the preliminary planning that is essential and all this as a matter of urgency.

*COMPTON RECEIVES DRAFT FOOD AND NUTRITION POLICY FOR ST. LUCIA*  
*From the Voice of St. Lucia, 25 January 1975*

A draft Food and Nutrition Policy for St. Lucia for incorporation into the five-year National Development Plan 1975-1980 was submitted to Premier John Compton on Wednesday.

The document, prepared in consultation with Government colleagues by the Caribbean Food and Nutrition Institute and PAHO/WHO, was handed to the Premier by Ken Leslie, a CFNI economist who was himself involved in its preparation.

In making the presentation, Mr. Leslie read a letter to the Premier from Dr. Robert Cook, CFNI Director, in which St. Lucia's expressed need for the services of a specialist in marketing to assist in the development and operation of an improved marketing policy, was said to have been conveyed to the UNDP.

The letter also contained information that an agency in Mexico has been contacted regarding the possibility of obtaining high-yielding varieties of corn which may be useful in plans for expanded production, and promised to follow up these contacts to ensure that St. Lucia receives the help necessary.

Premier John Compton, in receiving the document, referred to the fact that 1975 had been designated Agriculture year in St. Lucia.

A mere declaration of such a purpose, he said, would have no effect; what would matter were the things that happened during that year, and one of the things that have already happened was the presentation of the report he had just received.

Too often, the Premier said, we have very beautiful studies being presented which are destined to break down in their implementation.



The burden of the development of our country is on us, he added. We must accept the prime responsibility. Others may help us to bear our burden, but the burden is ours.

The report has been presented within two months of a final workshop held here in November last with the assistance of CFNI.

It was in 1973 that the Government of St. Lucia had invited the Institute whose Headquarters are in Jamaica, to carry out a preliminary review of the food and nutrition situation in the island.

As a result of this survey, the CFNI was requested to undertake a detailed survey of the nutritional status, food consumption, food habits and expenditure patterns of the people of the State.

This was carried out in February last year, and the results presented to Ministry officials in September 1974. This was followed by the November Workshop and the present Report. 0

**CAJANAQUOTE**

*"Energy is eternal delight."*

*William Blake (1757-1827)*

## NEWSPAPER CLIPPINGS

*TRINIDAD ENERGY WILL BOOST WEST INDIAN AGRICULTURE*  
*From the Trinidad Guardian (Trinidad)*

Citing Trinidad and Tobago's oil, in its impact on food, as the "Great and ultimate force for decolonisation in the Caribbean," Prime Minister, Dr. Eric Williams, yesterday assured Food and Oil Conference delegates that Cabinet would consider with the greatest interest and maximum urgency, recommendations coming out of the talks.

This discussion on oil and food is predicated on the determination to make the oil and gas of Trinidad and Tobago the great fertiliser of Caribbean agriculture, Dr. Williams told delegates in his opening address at the Chaguaramas Convention Centre.

While emphasising the importance of oil and gas for industrial diversification - petro-chemicals, steel, aluminium - Dr. Williams considered the discussion as the first step towards destruction of the old colonial system of dependence on imported food and the establishment of a dignified and comfortable farming community.

### *Essential Link*

Dr. Williams added: "Participating in this discussion here at Chaguaramas, are representatives of some of the major oil and fertiliser companies operating or proposing to operate here in Trinidad and Tobago.

"In our contacts with these companies over the past few weeks, over and above the prospects of oil as a base for human and animal nutrition, the Government has sought to bring to bear on our food production plans the technical expertise at the disposal of these companies and their assistance in processing, farm mechanisation, including local manufacture, and export outlets for our production especially canned juices and vegetables.

"We have in mind specifically the association of each individual company, through the Ministry of Agriculture, with a large area, approximating 1,000 acres divided up among several crops and operating, in so far as

possible on cooperative lines."

Dr. Williams said in all of the planning, the goal was not limited to Trinidad and Tobago but to the Caribbean Community area as a whole and this, he added, was especially the case in respect of fertiliser which he described as the essential link between oil and food.

He drew participants' attention to the fertiliser requirements of Caricom neighbours, and said the large number of proposals now before Government for the increased production of fertiliser should be seen in the context of the relevant recommendation of the Declaration on Food and Population.

In this connection, he specifically invited delegates to pay heed to statistics prepared for them on fertiliser, and to note that the fertiliser consumption of Trinidad and Tobago itself was less than half of its fertiliser requirements.

Dr. Williams added: "You can thus appreciate the great scope before us in this area alone in the field of Caribbean integration - not to mention the other export possibilities in the context of the almost incredible under-consumption of nitrogen fertiliser per capita in such developing countries as Nigeria, Indonesia, Bangladesh, India, Pakistan, Brazil, and even China.

"Caribbean integration also raises the question of forest products - if only because the food grown in forest areas - and shipping within the region," Dr. Williams stated.

He mentioned ways in which Government had been utilising its oil revenue, including initiation of a Caribbean Integration Fund which, he added, set the pace for what was hoped would be "a commercial operation of all the Caribbean Community Governments working towards Caribbean integration".

This, he added, was designed to create "a greater share for Caribbean farmers in the food expenditure of the Caribbean population, and a powerful orientation to the export market for Caribbean processed and packaged products of the highest quality".

Dr. Williams told delegates that the import food bill of the Caricom countries was over \$500 million today, of which Trinidad and Tobago accounted for nearly one-third.

Food imports represented fifteen per cent of the total Caricom import trade, with the figure in Trinidad and Tobago being nine per cent.

Principal imports, he said, were meat products, \$90 million or fifteen per cent of the total food imports; dairy products, \$90 million or fifteen per cent of the total food bill; fruit and vegetables, \$50 million or ten per cent of the total; feeding stuff for animals, \$30 million or six per cent of the total.

"The Caribbean countries necessarily import inflation when they import their food," he said, adding that the price spiral was painfully evident in the analysis of selected food imports of Trinidad and Tobago for the years 1966 and 1973.

*MAKE PROFIT THE 'CARROT'*

*From the Advocate-News, Barbados, 6 February 1975*

The Minister of Agriculture, Mr. Anderson Morrison, has blamed the attitudes of people and the lack of incentives for the failure of the agricultural sector of the Barbadian economy.

The attitudes referred to although not specifically spelled out must include the disinterest of young people in agriculture, the shift from farming to real estate development by some land owners and the exploitation of market conditions by some dealers.

Older people in Barbados would still remember the early days of this century when one of the main Barbadian ambitions was to own an acre or two of land so that one could grow some canes and food crops and rear some animals to feed one's family even if not to make a profit. At that time, Barbados was almost totally agriculture orientated. The people of worth were the plantation owners and the peasants saw owning land and farming even on a modest scale as the means to achieving success or status.

But the oligarchic structure of Barbadian affairs ensured a good life for the few and a poor life and limited expectancy of upward mobility for the many. Agriculture in reality for the majority of peasants meant long hours of daily strenuous toil for uncertain produce and profits. Small wonder then that the more forward thinking envisioned something different for their children, a life where they did not have to grub in the soil for a living.

Commendable as this may have seemed then, it was the start of a new trend of thought which has progressively led us to the point where the Minister now complains of attitudes detrimental to agriculture.

Middle aged Barbadians will also remember when most schools in Barbados planted some sort of garden - some had both flower and vegetable plots - and there was great pride in competition among staff and pupils alike for the prizes available at the Annual Industrial and Agricultural Exhibition. A

pointer to the state of agriculture is that this exhibition which had been the main social event in Barbados for more than a century has vanished from our midst.

But attitudes did not change overnight. People who had struggled along on agricultural income saw no worthwhile rewards for their efforts and their minds quite naturally turned from farming to easier, more lucrative pursuits.

Successive Governments must share the blame for the decline in agriculture in Barbados, as must the plantation owners who perpetuated a system of low wages and servility and no hope of advancement for the workers.

#### *Handicap*

Sugar cane, Barbados, main crop, always took the lion's share of research funds, time, effort and expertise as was to be expected, but the neglect of other food crops was to prove a grievous handicap as long ago as World War II. In the face of blockades and the priorities of the great nations Barbados had to shift for herself. Legislation was passed requiring plantations to plant a percentage of their acreage in food crops.

Even then, strict adherence to this rule was not enforced and there were cases where the acreage was planted in vegetables or tubers as the letter of the law demanded, but the crops were ploughed under and never reaped or marketed.

Successive Governments also supported agricultural stations where research was conducted in addition to practical farming, but these have progressively drifted downwards into largely non-productive areas with few exceptions. Agriculture as a practice or a subject has had a mixed reaction from the island's schools.

Government's efforts at marketing agricultural products have been far from successful - the Minister mentioned dissatisfaction with the Barbados Marketing Corporation - and that is the key to our future marketing plans.

The Minister doubtless had in mind some special "carrot" to lure people back to the land. What drove them off was mainly lack of profit. Adequate profits can lure them back.

The necessary developmental inputs have been denied agriculture except for sugar cane and even that declined desperately because of bad handling and unrealistic attitudes.

The Government has more recently been working diligently to revive flagging interest in agriculture, spurred on by the knowledge that there is a worldwide food shortage. Starving millions in Asia and Africa make grim reading and shocking scenes on television, but nobody is starving in Barbados - yet food is of course far too expensive and we import staggering quantities annually. But we eat and that seems to be all that matters.

Talk and gimmicks won't revive interest in agriculture. Adequate marketing machinery, efficient processing and storage facilities, planning, direction and the assurance of profit might.

For agriculture to attract more than sketchy attention, the Government must demonstrate that it will make the same kind of high pressure efforts to get for vegetables, root crops, fruit, poultry, animal and dairy products the same sort of guaranteed prices and special treatment that applies to sugar.

*INVOLVE YOUTH IN FARM PLANS*

*By Eric Smith, (Teen Talk)*

*From the Advocate-News, Barbados, 9 February 1975*

If there is any consensus in Barbados on the food policy, it is that the nation must cut back on food wastage and reduce its dependence on imports in the commodity. Fortunately, there are many in this island who see the importance of such a thing as cutting imports and have not just decided to be "talkers" but "doers" in trying to ease the situation. To this end, the organising committee of the Northern Area Youth Food Agriculture Movement (NAYFAM) must be regarded as people with the good of the country at heart. Whatever they should hope to gain by partaking in such a project other than helping the nation, the whole idea is one in which if there is good response, then benefit can come to all.

Generally, Barbadians neglect the agricultural sector, for its social snobbery and sometimes small economic returns, both of which have become commonplace over the past few years. But from the way food prices are now increasing, more than three-quarters of Barbados' population would accept the return of agriculture if it were the only alternative to cope with the rising prices now being charged.

NAYFAM is urging youths not mainly to become agricultural workers, but not to let their bread and butter dwindle any more. This movement's members do not lack experience. Some have established themselves as leaders in agricultural projects in this country. Barbadians can cut back its food imports by millions of dollars annually, simply by having more NAYFAM-type projects, established throughout the island.

Because of certain climatic and rainfall conditions experienced in the country, certain areas or projects could be designated to special crops and livestock. In the drier parts of St. Philip and St. Lucy areas, livestock such as poultry, rabbits and pig rearing could be undertaken as opposed to the cultivation of vegetable gardens in the rich loamy soils of the St. George Valley. This would almost certainly have an immediate effect of boosting the country's food growth.



It is not really necessary to have many acres of land to satisfy our local market since one's ability to provide for his household would mean, someone else does not have to supply you. Food, would be more readily available. With the "grow more food" campaign contemplated by the experts, food prices will not continue to soar and nutritional balance would be achieved.

The birth of any movement such as NAYFAM, must be devoted to increased growth of food in Barbados as well as having the good of the people and nation at heart. Regardless of who the organisers are and what they possess, they must be willing to involve the youths in their project and let no barriers exist to a progressive mind wanting to become actively involved. Some people realise that in such undertakings the results are great even if they take time to achieve. Ambitious people are the type needed to get into such undertakings, but with the other man's welfare at heart, so there is no room for self-seeking bandwagoners.

All youths should realise the value and follow suit to NAYFAM's worthy idea. In case you live in an area where there seems to be little hope of such a project as NAYFAM being started then the effort on your own part by properly utilising your own tiny plot can prove successful. NAYFAM is a project which could be emulated, with even greater benefits.

## PUBLICATIONS FOR SALE

### 1. FOOD COMPOSITION TABLES FOR USE IN THE ENGLISH-SPEAKING CARIBBEAN

Price: US\$5.00; EC\$5.00; J\$2.00

*The water, energy, protein, fat, carbohydrates, fibre, calcium, iron, vitamins A and C, thiamine, riboflavin and niacin contents used in the area are given both in terms of 100g edible portion (plus refuse) and 1 lb. as purchased. Also amino acids and cholesterol content of selected foods are listed. The publication is indexed by both scientific and common names.*

### 2. PROTEIN FOODS FOR THE CARIBBEAN - PROCEEDINGS OF A CONFERENCE (1969)

Price: US\$2.50; EC\$2.50; J\$1.00

*The papers presented are in six sections: background, food and nutrition policy, protein resources, protein foods, weaning mixtures and government action. Many presentations get down to considerable and useful detail.*

### 3. GUIDELINES TO YOUNG CHILD FEEDING IN THE CONTEMPORARY CARIBBEAN (1970)

Price: US\$0.50¢; EC\$0.50¢; J\$0.20¢

*This booklet represents the authoritative and considered views on the subject of leading paediatricians, obstetricians, nutritionists and public health workers in the English-speaking Caribbean. It has been designed to deal with real problems, with known practices and with recognised patterns of malnutrition. It has been used as the basis for pamphlets and "localised" booklets in the different countries.*

### 4. NATIONAL FOOD AND NUTRITION SURVEY OF BARBADOS (1972) - PAHO Sc. Pub. 237.

Price: US\$2.50

*This 139 page document reports on the survey undertaken in 1969 by the Government of Barbados with the assistance of the Caribbean Food and Nutrition Institute. It contains information on nutritional status, household characteristics and family budgeting, infant and young child care and feeding, pregnancy and lactation, food production, food economics, and household food consumption and includes a food balance sheet. Detailed recommendations arising from the survey are given.*

### 5. WEST INDIAN MEDICAL JOURNAL SPECIAL ISSUE (1971, Vol. 22, No. 2)

Price: US\$3.00; EC\$3.00; J\$1.20

*This issue contains the Guidelines to Young Child Feeding (item 3 above) and also the 22 background papers that led to the guidelines.*

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*Note: All prices include postage and, readers will note, all but one is subsidised for purchasers in the Commonwealth Caribbean. Send your requests, (with a money order) to: Caribbean Food and Nutrition Institute, P.O. Box 140, Kingston 7, Jamaica, W.I.*

## BOOK REVIEW

*PAEDIATRIC PRIORITIES IN THE DEVELOPING WORLD*  
By David Morley. London: Butterworths (1974).

Every doctor who has practised paediatrics in developing countries will come across passages in this book which will make him want to stand up and cheer, for it so abounds in well-stated truths which are far from universally recognized. Every doctor who is or will be in such practice, whether mainly clinical and therapeutic or preventive and administrative, will gain some knowledge from this book which will be of value to him, to his small patients and their parents and to the community he serves. Indeed, doctors in richer countries would find most of it interesting and parts of it relevant to the problems in their own daily work, particularly the chapters on management and on communication.

It can be warmly recommended also to certain others besides doctors and medical students, particularly to senior nurses and some administrators and politicians. (Though it is a dangerous book for a politician; having read it he might be tempted to sack half his well-heeled doctors and use the savings to employ many more barefoot ones.)

It is difficult nowadays for a single author to write an authoritative text book, viz a comprehensive account of all the important matters within a wide subject-area such as a medical specialty, or even sub-specialty. For this the reader must continue to rely on a judicious blend of Nelson and Jelliffe, supplemented with Maurice King. Dr. Morley's book is, as the title implies, rather a treatise on *priorities*, on the most important matters.

The accounts of the management - at the level of the village at the Under Fives Clinic, and the small rural hospital - of measles, diarrhoea and whooping cough are competent and clear. The chapters on malaria, tuberculosis and acute respiratory infections are also useful. The section on the Under Fives Clinic is a very good guide indeed to the prime practical means of comprehensive child care. The chapter on the 'At Risk Child' deserves special mention, and that on the weight chart, or 'Road To Health' as

Dr. Morley calls it, embodies his well-known views on the subject. If here he tends to stray a little from the objective into the somewhat dogmatic, we can accept this cheerfully in exchange for the many useful innovations which he has made. Dr. Morley was not the first to use individual weight charts - they were used in UNRWAPR clinics, for example, almost twenty years ago - but his ingenious improvements and the increasing number of uses which he has made of the chart have turned it into an indispensable instrument of comprehensive child care in developing countries.

In my opinion the best chapter of all is that on birth interval and family planning. If its ideas were put widely into practice it would have great significance for the future of the developing countries. Never can there have been a better exposition of the links between health care of the young child and limitation of family size, and of how each can promote the other at the health service level.

Many of the author's ideas, and many of his supporting data, are drawn from his experience in Imesi in Western Nigeria, but his subsequent work as a teacher of tropical child health in London has put him in close touch with paediatricians and postgraduate students from all over the world, and the book benefits from this also.

There are a number of misprints and minor errors, but these will no doubt be corrected in the second of what one hopes will be many editions.

Robert Cook  
This review first appeared  
In: Develop. Med. Child Neurol.,  
1974, 16, 548-549.

## FROM THE EDITOR

### CONSUMER POWER

*There is a certain inertia that must usually be overcome if any improvement in the quality of life is to be successful. This inertia may be partly due to overwork, partly to lack of interest and partly to an unwillingness to change established patterns. It is also associated with lack of awareness of what needs to be done to bring about such an improvement. The incident reported on pages 194-195 is an example of inertia and a failure of hospital staff to realize or respond to the needs of a patient. Consumer power can awaken and maintain interest, and thus help to remove inertia.*

*Consumer power in our part of the world has neither the tongue nor the teeth that it might have when it comes to nutrition. The people of a community must demand and get adequate nutrition care for their children. The government may be willing, but without friendly but firm persuasion, things will slip, individuals will be less energetic and the community itself will become apathetic. Dr. Antrobus' article on pages 183-189, discusses the principle of "active participation" of the people in a nutrition programme.*

*Democracy begins and ends with the people, so does social well-being and good nutrition. Those of us who are civil servants of one kind or another must learn to live with and to encourage consumer power. This is not easy and is certainly uncomfortable but it is essential.*

THE EDITOR

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*Note: Ideas and comments from readers on this subject would be welcome.*

## TOPICS AND COMMENTS

### *FAMILY SIZE AND NUTRITION*

*By Dr. Fred Sai\**

World agricultural production, population growth, political barriers, trade practices and food consumption patterns all form a chain which has made for a situation in which twenty per cent of the world's people is overfed, while four hundred and sixty million people remain underfed and perilously close to starvation all the time.

It must be recognized that the rapid rise in population has been a significant contributory factor in the major food and nutrition problems faced by many developing countries today. As a group, the developing countries produced a rate of increase in food production during the 1960's which would have been very satisfactory, but the gains were literally eaten up by the population; and increased exports of highly nutritious foods from poor countries to richer ones in order to gain foreign exchange for development needs, did not help.

Countries must tackle the food and nutrition problems as a major priority issue for peace, security and national survival.... An intense international effort is needed, both to stimulate and to supplement national activities aimed at eradicating hunger and ensuring adequate nutrition for all.

So far very few countries have given the right priority to food and nutrition policies and programmes despite the fact that good nutrition has a definite contribution to make to overall socio-economic development, as well as being ensured by such development. It is therefore necessary for countries to evolve long and short term policies aimed at producing and making available enough of the right kinds of food. Such policies must be synchronized with

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*\*Dr. Sai is Assistant Secretary-General of the International Planned Parenthood Federation. This is an excerpt from his speech at the World Food Conference.*

adequate population policies and be made an integral part of overall socio-economic development plans.

Both food and nutrition and population have been omitted from many development plans and strategies and the time is now ripe for correcting the balance. National and international organizations which support family planning and population programmes need to be aware of the complex interrelations between such programmes and those for food and nutrition and plan their activities accordingly. Well designed and executed plans for fertility regulation have an important role to play in the improvement of nutrition - or at least in the prevention of aggravating an inadequate status.

The International Planned Parenthood Federation reaffirms its belief that family planning is a human right; but more than that it has a direct contribution to make to individual and community well-being. In today's marginal economies, satisfactory feeding of the people cannot be ensured if fertility regulation programmes do not go hand in hand with programmes for nutritional improvement.

FOOD TECHNOLOGY, NUTRITIONAL NEEDS  
AND ECONOMIC EXPEDIENCY\*

We need to direct attention to the links between social structure and diet. There is some truth in Ludwig Feuerbach's pun "der Mensch ist was er isst" - man is what he eats. Nowadays we eat a more highly processed diet, and are further removed from the agricultural sources of our dietary items, than ever before in history. This diet would be unimaginable without the social and economic changes associated with the rise of industrial capitalism. It is, one might say, the diet of "industrial-capitalist-man".

Within our economic system, food production has a twofold function: to satisfy both the human need to eat and the capitalist need for profit. To a far greater extent than was the case in previous historical periods, what food is grown and how it is grown, and what food is processed and how it is processed, depend on the criterion of profit as well as on biological and psychological criteria. From this state of affairs, one may observe that nutritional science contains a socially critical potential, in so far as it is able to highlight contradictions between nutritional needs and economic expediency.

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*Editor's Note: The Flour Advisory Bureau in Britain (which represents the bread industry) has recently been running an advertising campaign on the alleged nutritional benefits of bread. This has resulted in controversy in the pages of the magazine, New Scientist. Readers interested in the ethics and the legal implications of food advertising, and the need for fair and honest reporting of nutritional matters, including the recognition of controversy where it exists may like to see the complete article from which this quotation comes. Please write to the editor of 'Cajanus' if you would like a photocopy.*

\*From "Bread Advertising and Scientific Debate" by Harry Rothman and David Radford. *New Scientist*, 24 October 1974.



AVAILABLE DATA ON THE STATE OF FOOD AND  
NUTRITION OF THE PEOPLES OF THE COMMONWEALTH CARIBBEAN\*

by

J. M. Gurney

ASSESSING UNDERNOURISHMENT

Health

If we are overnourished we get fat and if we are undernourished we get thin and undernourished children grow slowly. The state of nutrition of individuals or communities is directly reflected in body size and shape and in growth rates. Severe and specific nutritional deficiencies are manifested in certain clinical signs leading, if the condition persists, to specific diseases, such as marasmus or kwashiorkor, beri-beri or pellagra.

If we are malnourished we function worse - physically, mentally and probably socially. But these effects are difficult to measure in human beings and are not much used in the assessment of nutritional status, or even in the measurement of the consequences of malnutrition.

Death, as far as the individual is concerned, is the ultimate end-result of an inadequate diet. However malnutrition alone rarely causes death; it is nearly always precipitated by other conditions, such as infections related to poor hygiene. The reaper, as often as not, is malnutrition but his scythe is gastroenteritis.

The vulnerability of individuals to the effects of an inadequate diet vary with age. The breast fed infant is protected from malnutrition for at least six months. The older infant "mewling and puking in the nurse's arms"

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\*This is the text of an address to the Conference on Maximizing Regional Self-sufficiency in Food in the Commonwealth Caribbean, Georgetown, Guyana, 6-12 April 1975.

and the toddler are extremely vulnerable to malnutrition. This is the age in which we find marasmus and these are the children who die from malnutrition. As he gets older the surviving child adapts to his nutritional, hygienic, social and cultural environment. He may not function as well as he might have. He may be frequently absent from school or inattentive when he reaches there but he is unlikely to become seriously sick.

A hardened economist, dedicated by his training to saving society rather than saving life alone may consider different priorities than the paediatrician and the nurse. He may consider the effects of undernourishment on work productivity, earning power and learning power as more significant and serious than death in early childhood. We know that many farmers have a dietary energy intake inadequate to allow them to perform regular farming activity without loss of weight. I do not want to over-argue this point. There is no doubt that if an individual's dietary energy intake is below his requirements his maximum work output is reduced. However, take a cane cutter for example: inefficiencies and breakdowns in the factory may well be the first limitations to productivity rather than his undernourishment. The tragic condition of underdevelopment affects most aspects of life, and a single blinkered approach or simplistic philosophy will only distort development, not facilitate it.

#### *Diet*

The requirements of humans for nutrients are known, although not with the precision that, for example, chicken farmers know the optimal nutrient intakes of their flocks. If we humans were bred as layers or broilers, intellectuals or workers it might be possible to make extremely precise estimates of nutrient requirements but we are not like that; we are troublesome beings of great variety and adaptability. Compare the family of Ganesh Prasad, a merchant in Georgetown, with that of Joe Bone, a peasant farmer from Rockstone Pen in the Mocho Mountains of Jamaica, in terms of the foods they eat, their purchasing power, their aspirations and their requirements.

While we can estimate requirements for nutrients it is quite another matter to attempt to specify essential foods. Certain guidelines can be given and, if they take into account nutrient requirements, socio-cultural needs and preferences, ecological constraints and economic limitations, they can be very useful.

#### AVAILABLE INFORMATION IN THE COMMONWEALTH CARIBBEAN

##### *The Data*

Fairly complete information on nutritional status is available for many countries of the Commonwealth Caribbean. National food and nutrition surveys using accepted procedures have been carried out on statistically appropriate samples of the populations of Barbados (1968), Guyana (1971) and St. Lucia (1974). Considerable reliable information is available on a national basis from Trinidad and Tobago (1970, 1972) and Jamaica (1969-70, 1970-71). Useful, but more limited reliable data are available from St. Vincent (1969), Grenada (1972), the Turks and Caicos Islands (1973) and Belize (1973) (figures in brackets refer to dates of surveys, not publication). Mortality data are available from all countries in the area; however the reliability of such data depends on the accuracy of collection.

Because so many individuals do not receive custodial care for malnutrition (thank goodness, when we consider what this often involves<sup>1,2</sup>) hospital records are of limited value for assessing community prevalences of malnutrition. Another confusing factor is that, because of the close inter-relationship between inadequate diets and poor hygiene, one child may be diagnosed as having or dying from either 'marasmus' or alternatively 'gastro-enteritis' depending on the whim of the attending physician. The two diseases are really usually inseparable.

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<sup>1</sup>Cook, R. (1971) "Is Hospital the Place for the Treatment of Malnourished Children" *J. trop. Pediat.*, 17, 1, 15-25.

<sup>2</sup>Bantje, H.F.W. (1974) Unpublished Report.

## THE STATE OF NUTRITION IN THE COMMONWEALTH CARIBBEAN

Table 1 sets out highlights of the most recent available information on nutritional status in the Commonwealth Caribbean countries (in March 1975).

- (1) The average Commonwealth Caribbean infant mortality rate is almost twice that of North America and the toddler mortality rate (1-4 years) is five times as high. This latter is generally accepted as an index of malnutrition.
- (2) 1.4 in every 100 under-5 year olds is very severely underweight (in Gomez grade III) and in imminent danger of death. A further twelve per cent are very definitely underweight (Gomez grade II) and a further forty per cent are in a borderline condition (Gomez grade I).
- (3) Anaemia is widespread in under-5 year old children and in adult women.
- ✓(4) Average daily per caput nutrient requirements in Caribbean countries are around 2,250 kilocalories (9.4 MJ) and 43 gm protein. These figures are derived from FAO/WHO recommendations and, at least for energy, are not overestimates. They have recently been adopted unaltered by a local committee appointed to look into nutritional requirements of the area. The national food energy supplies vary from being about equal to requirements to providing an 'over-supply' of about thirty per cent. Protein supplies are well above requirements.
- ✓(5) Distribution of the available nutrients is however inequitable. High proportions of households, often well over fifty per cent, do not get adequate supplies of food energy. This picture is reflected, but without the same brilliance, by inadequate protein intakes. All the evidence goes to show that the protein gap is a mirage in the desert of total energy deficiency. There is no specific protein

deficiency. There is no need to increase the proportion of protein in most diets in the area.

- ✓ (6) The maldistribution of nutrients has been found to be significantly associated with the maldistribution of wealth and of family dependants, the poor and the large families being the most underfed.
- ✓ (7) On a country-by-country basis the dependence on imported foods as major sources of nutrients is striking. A high proportion of these imported nutrients comes from outside the Commonwealth Caribbean.

Clearly some over-supply of nutrients will always be necessary to counteract inevitable maldistribution. The United Kingdom Ministry of Food estimated that, during the 1939-45 War and the post-War period, the supply to the retail outlets should provide about 120% to 125% of estimated requirements of food energy.<sup>1</sup> This figure may supply a useful yardstick for the Caribbean if inequalities of purchasing power are brought within reasonable bounds. It should be noted that in this period in the United Kingdom food rationing was in force ensuring an equitable distribution of food.

It would seem useful in the context of the Caribbean Common Market to consider the problem of reliance on imported foodstuffs on a regional basis, and to construct a regional food balance sheet. This would show the proportions available to the population of food energy and protein that are derived from sources outside the region. Such an enterprise has not, as far as I am aware, been undertaken. Leslie and Rankine<sup>2</sup> mentioned both regional and national self-sufficiency. A regional food balance sheet would be useful.

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<sup>1</sup>Harries, J.J. and Hollingsworth, D.F. (1953) "Food Supply, Body Weight and Activity in Great Britian, 1943-9", *Brit. med. J.*, 1, 75-78.

<sup>2</sup>Leslie, K.A. and Rankine, L.B., "Food Supplies in the Commonwealth Caribbean: A Case Study of Jamaica". Presented at Conference on Maximizing Regional Self-sufficiency in Food in the Commonwealth Caribbean, Georgetown, Guyana, 6-12 April 1975.

Country	Population in thousands (1973 estimates)	MORTALITY		NUTRITIONAL STATUS						FOOD INTAKE				
		Infant mortality rate per 1000 live births	1-4 years mortality rate per 1000 in age group	Percentages of children under 5 years old in three grades of low weight accord- ing to Gomez scale			Percentages of children under 5 years old in three grades of anaemia			Per caput nutrient availability (from food balance sheet survey)	% of households not meeting requirements (from food consumption survey)	Energy	Protein	% of nutrient from imported foods (from food balance sheets)
				1	2	3	Hb <8.0	Hb 8.0-9.9	Hb 10.0- 10.9					
Jamaica	1980	27	4.6	39	9	1.4			2945	74		46	62	
Trinidad & Tobago	1060	28	2.1						2431	58	40	31	49	
Guyana	760	45	5.8	44	17	1.4	1	9	2502	63	75	64	34	
Barbados	241	34	1.3	39	11	1.2	8	15	2926	74	58	42	58	
Bahamas	193	35	1.7										76	
Belize	132	34	4.1	40	18	1.2								
St. Lucia	114	52	4.1	33	9	1.9	0	8.6	2244	52	72	30	65	
Granada	97	16	1.4	44	10	0								
St. Vincent	92	70	6.2	47	14	1.5								
Antigua	74	19	0.4											
Dominica	74	45	5.9											
St. Kitts, Nevis	65	70	3.6											
Montserrat	13	31	2.9											
Cayman Islands	11	11	-											
Turks & Caicos Is.	6	47	-			<7	0.3							
Commonwealth Caribbean	4912	33	3.9	41	12	1.4			2713	67	56	44		
Northern America		18	0.8	16	0	0								
South America		60	4.2	-	-	-								

Notes: The Jamaican weights are for children under 48 months of age. The Belize Gomez classification is derived from a National sample of 5½ year olds. The Barbados anaemia rate is re-calculated from original data. The Grenada anaemia result refers to fifty 3-4 year olds from one village. The Commonwealth Caribbean figures are means weighted by the population of each country for which data are available.

*THE PRINCIPAL FOODS SUPPLYING NUTRIENTS*

There are two major ways of measuring national foods availability and consumption. The first is a national food balance sheet, derived from yearly estimates of production, imports, diversions to livestock and so on converted to an average daily per caput availability. The other method is a household food consumption survey. Both procedures use a food composition table to convert the weight of each food to the amounts of various nutrients derived from such food. I should note here that a Food Composition Table for the Contemporary Caribbean is available from CFNI. The composition of almost every significant local food is known. Both methods of estimated food consumption are fraught with difficulties; they do however give acceptable indications (and the best available) of those foods that are important in the diet. Recent food balance sheets and food consumption surveys agree remarkably well in the Commonwealth Caribbean over which are the most important foods and how much they provide.

Table 2 sets out data derived from the most up-to-date food balance sheets. The cereals, and in particular wheat flour and its products provide by far the largest proportion of both total energy and protein of all food groups.

Wheat provides between 17 and 24% of available energy and 18 to 30% of protein for those Commonwealth Caribbean countries for which information is available. Rice provides from under 5% of both energy and protein in St. Lucia to 41 and 30% respectively in Guyana.

The foods that make up the diets of various income groups are known for Jamaica. Dark sugar, wheat flour and cooking oil are the major sources of dietary energy to the poor (Table 3). Rice is slightly less important in this respect to the poor but becomes the largest energy supplier to the more affluent half of the population. Wheat flour and rice are also the major suppliers of protein to all but the richest quartile of the Jamaican population (Table 4). Rice is about half the value as a 'good buy' of both energy and protein as is wheat flour (CFNI data). The housewife of whatever income group

Table 2: Percentage contributions in various countries of each food group to energy (E), and protein (P), availability and of all individual food items that contribute at least 5% to either energy or protein availability.

	GUYANA (1970)		BARBADOS (1971)		ST. LUCIA (1970)		TRINIDAD & TOBAGO (1970)		JAMAICA (1972)	
	(E)	(P)	(E)	(P)	(E)	(P)	(E)	(P)	(E)	(P)
<i>Cereal and Cereal Products</i>	59	49	31	30	28	33	40	43	31	38
Wheat products	17	18	19	20	24	30	26	31	22	30
Rice	41	30	10	8			14	12	6	4
<i>Starchy Fruits, Roots and Tubers</i>	6	3	10	7	17	11	3	2	15	10
Tannias					5					
Bananas					5				5	
Yams									5	
<i>Sugars and Syrups</i>	5	0	19	0	15	0	17	0	17	0
Sugar, not refined			16		9		117			
Sugar, refined					5				16	
<i>Pulses, Nuts and Oilseeds</i>	4	8	4	9	2	4	4	12	3	4
Dried beans and peas				8				10		
<i>Vegetables</i>	0	0	1	1	0	1	1	1	1	1
<i>Fruits</i>	1	1	2	0	7	3	2	1	3	2
Mangoes					6					
<i>Meat and Meat Products</i>	4	10	12	22	10	20	6	14	7	16
Beef and veal				5		5				
Poultry				7		6		7		
<i>Eggs</i>	0	1	0	1	1	2	1	3	1	1
<i>Fish and Fisheries Products</i>	3	12	2	12	2	14	1	7	3	14
Fish, fresh, chilled or frozen			7			7				
Codfish, salted						5				
Canned fish									6	
<i>Milk and Milk Products</i>	7	14	7	17	4	10	6	15	7	12
Milk, evaporated			6							
Milk, full fat powder							5			
<i>Oils and Fats</i>	7	0	7	0	11	0	17	0	11	0
Coconut oil					6		10		7	
<i>Miscellaneous</i>	0	1	0	0	1	2	1	2	0	0
<i>Alcoholic Beverages</i>	3	0	5	0	3	0	3	0	1	0
<i>Grand Total (per caput per day)</i>	2502	63	2926	74	2244	52	2431	60	2945	74
	kcal	gm	kcal	gm	kcal	5gm	kcal	gm	kcal	gm

Notes: The figures which are rounded to the nearest whole number are derived from food balance sheets.



Table 3: The six most important sources of energy to four expenditure groups in Jamaica in 1971/1972. The data are derived from the Household Budget Survey.

Foods	Ranking of prime sources of dietary energy in four expenditure groups in Jamaica.			
	Lowest quartile	Second quartile	Third quartile	Highest quartile
Dark sugar	1	3	6	11
Wheat flour	2	1	3	5
Rice	3	4	1	1
Cooking oil	4	2	2	2
Green bananas	5	7	7	6
Bread	6	5	5	4
Condensed milk	8	6	4	3

spends about 8% of her food money on cereals (rather more in Trinidad). Rice does to some extent in Jamaica, replace wheat flour if the housewife can afford it.

The root crops appear in most countries of the area to compare well in price with the cereals on a pound-to-pound basis. However the housewife is buying about 80% water with her roots and gets much better value for both energy and protein from the basic cereals - cornmeal, counter flour and rice - than the roots. The roots and starchy fruits together contribute between 3 and 17% of energy, and 2 and 11% of protein for the countries of the Commonwealth Caribbean for which information is available (Table 2).

The contribution of the various staple foods of Commonwealth Caribbean dietaries has been discussed recently<sup>1</sup>.

<sup>1</sup>Gurney, J.M. (1975) "Staple Foods for the Caribbean". *Ecol. Food, Nutr.*, 4, 1-5.

**Table 4:** The six most important sources of protein to four expenditure groups in Jamaica in 1971/1972. The data are derived from the Household Budget Survey of Jamaica.

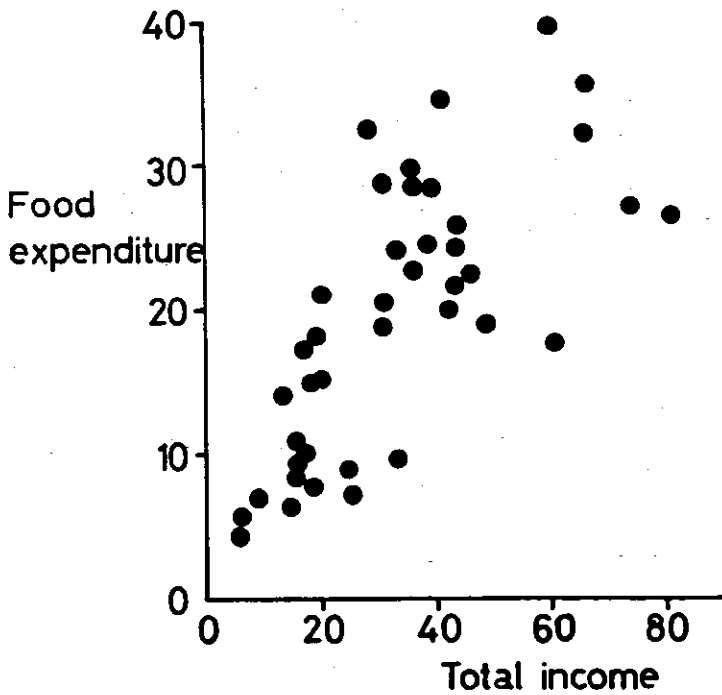
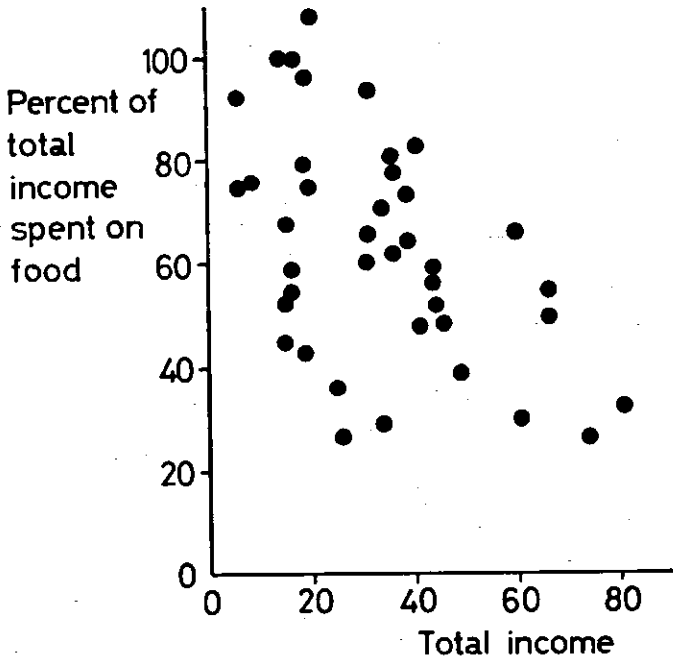
Foods	Ranking of prime sources of dietary protein in four expenditure groups.			
	Lowest quartile	Second quartile	Third quartile	Highest quartile
Wheat flour	1	1	3	7
Rice	2	5	2	4
Bread	3	2	4	3
Salted cod	4	6	7	6
Yam	5	10	10	10
Condensed milk	6	3	5	5
Chicken	10	4	1	2
Beef	13	8	6	1

#### GENERAL EXPENDITURE ON FOOD

Figures 1 and 2 illustrate from a small village study<sup>2</sup> the general picture with regard to food expenditure. The poor spend up to 80% or more of their available cash on food (and often have to chalk up credit). While the rich may spend as little as 20% - but much more in terms of dollars and cents.

For example, in Guyana in 1971 the poorest half of the households had less than G\$300 per caput per annum to spend; 87% of this went on food. The upper half had over G\$300 and spent on average 44% on food. A similar pattern has been found in Trinidad and Tobago. The poorest quartile of households in St. Lucia spent, in 1974, 61% or more of their money on food, while the richest quartile spent 36% or less. In all these countries undernutrition is primarily a condition of the poor.

<sup>2</sup>Gurney, J.M. (In preparation) "A Nutritional Survey in a Village in Grenada".



*DISTRIBUTION OF THE FOOD DOLLAR*

Table 5 shows that the most food money spent by the housewife (even the poor housewife) is on those foodstuffs categorised as "animal products", in particular meat. In strict nutritional terms, the existing diets usually would be just as good if the meat was replaced by a cheaper source of energy; the protein would not be missed, as it is present in excess in the original diet. However a meal without meat or perhaps meat-tasting substance is thought by most people to be incomplete. Baron of FAO has predicted "a shift in food demand towards protein-rich foods".<sup>1</sup> Can we afford such a shift? Can it be prevented?

*THE BEST BUYS FOR THEIR NUTRIENT CONTENT*

Knowing the retail cost per pound and the nutrient content of a food, it is possible to calculate the cost of energy, protein and other nutrients in the food. Such calculations of cost nutrient value have been done for most countries of the region (CFNI unpublished data). The phenomenal price changes of the past few years have not been confined to imported products. Thus, the ranking of cost nutrient values of various foods has not changed very much. A classification in the various territories in the Commonwealth Caribbean into good, bad and medium buys would be very similar with only minor differences. Starting in January 1975 the Caribbean Food and Nutrition Institute has instituted a regular food price monitoring service in the various territories of the Commonwealth Caribbean. Not only the cost per unit weight but also the cost nutrient values are circulated to interested recipients, ranked according to the cost of energy and protein of the various foodstuffs.

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<sup>1</sup>Baron, P., "World Outlook for Food Demand in Relation to Supplies".

Presented at Conference on Maximizing Regional Self-sufficiency in Food in the Commonwealth Caribbean, Georgetown, Guyana, 6-12 April 1975.

Table 5: The percentages of the 'food dollar' that are spent on each food group.

	TRINIDAD & TOBAGO (1970)		JAMAICA (1971/2)					
			Grouped by household income per annum for households of 4 persons and more					
	Rural	Urban	Under J\$2000 Rural	Under J\$2000 Urban Kingston	J\$2000-3999 Rural	J\$2000-3999 Urban Kingston	J\$4000 & over Rural	J\$4000 & over Urban Kingston
Cereals and cereal products	16	13	8	8	8	9	7	9
Starchy fruits, roots and tubers	6	4	9	5	7	4	7	4
Sugars and syrups	3	3	2	3	3	3	3	2
Pulses, nuts and oilseeds	4	3	3	2	4	2	3	3
Vegetables	9	9	6	5	6	5	5	5
Fruits	4	5	3	3	2	2	2	2
Meat and meat products	18	25	33	33	31	34	34	34
Eggs	4	4	1	1	2	2	2	2
Fish and fisheries products	8	5	13	12	14	12	13	12
Milk and milk products	12	13	9	13	9	12	10	12
Oils and fats	7	8	3	3	3	3	3	3
Miscellaneous	8	8	6	7	6	7	7	7
Alcoholic beverages	not included in calculations		4	5	5	5	4	6
Total weekly household expenditure on foods	T\$22	T\$36	J\$23	J\$24	J\$29.43	J\$31	J\$40	J\$59

Note: Data derived from food consumption/household budget surveys.

Data are provided in Table 6 on the cheapest available sources of dietary energy and nutrients in St. Lucia. Clearly (and this applies to the other territories) of the foods grown in the region, sugar, rice (some is imported), the legumes (some are imported), cooking oil and dark green leafy vegetables are all useful providers of nutrients. Of foods imported to the region, wheat flour (and its products), cornmeal, margarine, saltfish and beef (some is produced locally) and dried skim milk stand out. When we compare these lists with the foods widely eaten by the less affluent the wisdom of the impoverished housewife becomes evident. Apart from shortages of supply and from profiteering - over both of which she has little control - and apart from an often very inadequate management of feeding of her young children, the housewife does the best she can. A rational management of food production, importation, marketing and prices can, with education based on realities, help the low-income housewife to feed her family adequately and make meal time a pleasure. Malnutrition can be eradicated.

Information that can help us achieve this aim is provided, in a somewhat summary form, in this paper. If thereby new questions are raised, that is part of the business of living:

*"Any question that you can solve is part of a larger question which you can't."<sup>1</sup>*

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<sup>1</sup> Jon Tinker (1972) *New Scientist*, 54, 539

Table 6: The eight cheapest widely available sources in St. Lucia in 1974 of various nutrients, ranked in descending order

✓ENERGY	PROTEIN ✓	FAT ✓	CALCIUM	IRON
Cooking oil	Salt cod	Cooking oil	Dried skim milk	Brown sugar
Brown sugar	Salt beef	Lard	Liquid whole milk	Parboiled rice
Parboiled rice	Dried skim milk	Margarine	Dried whole milk	Red pea
Granulated sugar	Pigeon pea	Salt pork	Dark green vegetables	Breadfruit
Cornmeal	Black-eye bean	Butter	Condensed milk	Dark green vegetables
Lard	Split pea	Pork	Evaporated milk	Black-eye beans
Wheat flour (enriched)	Wheat flour (enriched)	Cheese	Cheese (Cheddar)	Pigeon pea
Margarine	Red peas	Dried whole milk	Brown sugar	Lentil
✓	THIAMINE	RIBOFLAVIN	NIACIN	VITAMIN C
Beef liver	Pork	Beef liver	Pork	Sweet pepper
Sweet potato	Brown rice	Dried skim milk	Brown rice	Pawpaw
Dark green vegetables	Wheat flour (enriched)	String bean	Parboiled rice	Dark green vegetables
Margarine	Pigeon pea	Dried skim milk	Beef liver	Green banana
Pawpaw	Black-eye bean	Liquid whole milk	Wheat flour (enriched)	String bean
Pumpkin	Split pea	Dried whole milk	Salt beef	Orange (fresh)
Butter	Parboiled rice	Condensed milk	Canned mackerel	Breadfruit
Green banana	String bean	Wheat flour (enriched)	Salt cod	Grapefruit
		Evaporated milk		

*Useful Sources*

Much more detailed information, from which the material presented in this paper is derived, can be found in the following sources:

*Population and mortality data for all countries:*

Pan Amer. Health Org. (1974) "Health Conditions in the Americas".  
Washington: PAHO (Sc. Publ. 287).

*Jamaica*

Gurney, J.M., Fox, Helen and Neill, J. (1972) "A rapid survey to assess the nutrition of Jamaican infants and young children in 1970". *Trans. roy. Soc. trop. Med. Hyg.*, 66, 653-662.

Food balance sheet, food consumption and household budget survey data presented at Seminar on "Food and Nutrition Policy for Jamaica" (27-31 May 1974) Kingston: Nutrition Advisory Council and CFNI.

*Trinidad and Tobago*

Government of Trinidad and Tobago and CFNI (1971) "Report and Interim Report on National Household Food Consumption Survey in Trinidad and Tobago, 1970". St. Augustine: CFNI

Gurney, J.M. (ed.) (1973) "Food and Economic Planning in Trinidad and Tobago - The Proceedings of a Seminar, 27-30 November 1972". Port-of-Spain: National Nutrition Council and CFNI.

*Guyana*

Government of Guyana and CFNI (1975) "The National Food and Nutrition Survey of Guyana, 1971". Washington: Pan Amer. Health Org. (in press).



*Barbados*

Government of Barbados and CFNI (1972) "The National Food and Nutrition Survey of Barbados". Washington: Pan Amer. Health Org. (Sc. Publ. 237).

*Belize*

Data collected by National Nutrition Committee. Unpublished.

*St. Lucia*

Government of St. Lucia and CFNI (in preparation) "The National Food and Nutrition Survey of St. Lucia, 1974".

*Grenada*

Gurney, J.M. (in preparation) "A Nutritional Survey in a Village in Grenada, West Indies".

*St. Vincent*

CFNI (1967) "St. Vincent Rapid P.C.M. Survey" (unpublished mimeographed document).

*Turks and Caicos Islands*

Cohen, M.D., Morgan, P., and Baker, P. (1974) "The Nutritional Status of Children in the Turks and Caicos Islands". W.I. med. J., 23, 92-97.

*THE MIDWIFE'S ROLE IN THE NUTRITION OF THE MOTHER AND CHILD\**

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In modern times in Western communities, the midwife's function has tended to focus in large measure on the mechanics of obstetrics - that is the management of labour and the early detection and prevention of complications of childbirth, with special reference to hospital deliveries. The prime objectives have been the avoidance of infection and trauma (including haemorrhage) in both mother and child.

While, plainly, the obstetrical aspect of a midwife's function is a major one, at the same time, recent advances and newer knowledge in world nutrition and in the need for adaptive MCH services suggest that she needs to be prepared to undertake a wider role. In some ways, perhaps, a role more akin in coverage to that of a traditional midwife in prescientific cultures, including those of the Western world until very recently.

*Adaptive MCH Services*

Reconsideration of real-life circumstances in the last few decades has clearly indicated that the delivery of health services is inadequate in most of the world, especially for mothers with young children. This is particularly so in developing, mainly tropical, countries, where large-scale maternal and child health problems result from the cumulative interactions between poor nutrition, infections and hazardous and excessive pregnancy, and have to be dealt with with such limited resources.

The need for "adaptive MCH services" is increasingly clear - that is the imaginative development of services related to the "shortage syndrome" of limited finance, staff and equipment, to practical knowledge of actual local problems and their causes, to available types and numbers of staff (and the potential for training and for "financial absorption"), and to cultural patterns.

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In devising adaptive MCH services appropriate for a particular country or region, the need for new cadres of staff, including auxiliaries and volunteers, has to be coupled with reconsideration of the roles and training of existing types of staff. In relation to the large-scale problems of malnutrition of mothers and children in developing countries, a redefined role and function for the midwife could be of great significance, as she could have a pivotal role in five biologically and culturally sensitive phases comprising what has been termed the "mother-young child complex" - that is the two maternal phases of *pregnancy and lactation*, and the three biological phases of the young human organism - the *fetus*, the *exterogestate fetus* and the *transitional*.

#### *The Midwife and the Culture Pattern*

In all cultures, pregnancy, childbirth, and the puerperal - neonatal period are regarded both as normal and yet as times of special danger, requiring particular practices and *rites de passage* to ward off illness and death, especially due to spirit forces.

In any part of the world, customs will be found which can be judged, from a strictly scientific point of view, to be beneficial, harmful, neutral (unimportant) and of uncertain effect. In some traditional cultures, all women receive a restricted diet, especially animal products. For example, in parts of East Africa chicken, eggs and mutton are forbidden. Food limitations are often made more stringent in pregnancy, the puerperium and lactation, as in the six week *pantang* following childbirth in parts of Malaya.

However, in many communities, a period of rest and isolation is ritually prescribed after childbirth, while a wider range of foods than usual may also be advocated, as with *ringa*, a nutritious fish soup used for the puerperal woman in upper Burma. In other societies, clay or dirt-eating may be habitual.

Paralleling these practices in Western obstetrics until recently, the harmful iatrogenic practices of dietary restriction in pregnancy (especially protein and salt) and the unnecessary use of diuretics may be quoted; while

the bizarre, completely unproven diets of the more extreme Western-type food cultists can be expected predictably to lead to an increase in some forms of malnutrition and certainly pose special problems as regards nutrition education.

In traditional cultures, the midwife's role is wide, covering pregnancy, childbirth and, at least, some weeks of the neonatal period, especially during the period of ritual seclusion observed in some communities. Scientifically, her obstetrical role is often inadequate or even harmful in relation to birth trauma and infection. She does, however, supply physical and emotional support during this whole period. She is the carrier of traditional knowledge and of advice on necessary mystical rites. She supplies both confidence and physical assistance, particularly during pregnancy, labour and the neonatal period. As a "navigator of the birth canal", she is often a danger; as a source of psychological support and physical assistance however, perhaps she is in advance of her technologically trained Western sister.

Basic to the practice of midwifery anywhere is the necessity to be informed on practices and customs in the local culture pattern, especially those directly concerned with pregnancy, childbirth and the early neonatal period, and to develop sufficient cultural relativity to be able to appreciate the beneficial aspects both of one's own practices and those of other groups. Often a most appropriate aim is a synthesis of the two.

#### *Biological Phases and Maternal and Child Nutrition*

The midwife's potential role in preventing malnutrition in mothers and young children can only be understood if viewed in the light of modern scientific knowledge, and also in relation to the five biological phases that go to make up the interrelationships and continuum, termed the "mother-young child complex".

The stereotyped categorizations of the young human organism into the fetus, the infant, and the so-called pre-school child have not been made on biological grounds. The infant - that is the young child up to the age of one year - is an arbitrary, calendar classification, of great use statistically.

The term "pre-school child" is a negative one, used in different senses in different parts of the world, and, anyway, seems to have been devised as an afterthought for this traditionally difficult to reach, somewhat forgotten age-group, lying between the statistical infant and the child attending school.

Biologically, it is helpful, especially from the nutritional point of view, to be guided by the hypothesis of Bostock - that is that the human fetus, in fact, can most logically be considered as having a full span of eighteen months, but has to be born at nine months, mainly because of the large size of the head in relation to the comparatively narrow birth canal. During the nine month period of extero-gestate fetal existence, the baby is traditionally as dependent on the mother as during intrauterine fetal life. The breast replaces the placenta as a source of food, and the extero-gestate fetus is in close continuing contact with the mother, including even the auditory stimuli of the rhythm of the two heart beats, and the cerebellar rocking stimuli of the amniotic fluid replaced by the swaying rhythm on the mother's back. This is especially so in many traditional cultures, such as those in parts of Africa, China and elsewhere, where the young baby is, in fact, marsupialized on the mother's back with a cloth sling.

The third biological phase of early childhood can thus be termed the "transitional" when, as with all mammals, the young creature is passing from mother's milk to the full adult dietary. He is also in a transitional state psychologically and immunologically.

In some communities, the psychological trauma of weaning may be combined with the nutritional ill-effects of various combinations of bacterial and parasitic infections to exacerbate the effects of inadequate infant feeding. In some such traditional communities, the transitional shows the highest incidence of protein-calorie malnutrition, including the severe form known as kwashiorkor. The second year of life is so particularly dangerous that a new term has been suggested - the "secotrant" (second year transitional).

On the maternal side, the two biological stages of pregnancy and lactation obviously have a major relationship with the nutrition of young children. However, logically this is much too restrictive, as the nutritional condition of the mother in her own infancy is also significant, in relation, for example, to stature and to pelvic size, especially with early mating in poorly nourished communities. Likewise, interconceptual nutrition - between pregnancy-lactation cycles - is relevant as a time for repletion of stores, although, in many traditional circumstances, such intervals are short and uncommon.

#### *The Midwife's Role*

In all ecologies, whether sophisticated urban or traditional rural, the midwife can have an important role to play in improving the nutrition of the mother, fetus and transitional.

#### *I. Fetal Nutrition*

The requirements of all nutrients are increased during pregnancy, and an inadequate maternal diet can lay a defective basis for subsequent infant feedings. The nutrient requirements of the exteroestate fetus are supplied not only by human milk, but also by fetal stores, particularly of iron, folic acid, vitamin B<sub>12</sub> and vitamin A. Maternal diets deficient in protein and folic acid can also affect the fetus directly and can be among the numerous factors responsible for a much higher incidence of low birth weight, full-term ("small for dates") babies in less well fed parts of the world, including minority groups in industrialized countries. Likewise, data is accumulating that poorly nourished mothers may produce a different, perhaps defective, placenta, with a lower nitrogen content and less cells.

Also, recent work has clearly shown that different species of animals have different highly vulnerable periods in relation to various biological insults. For example, maximum vulnerability of the brain to malnutrition as far as the rapidly growing young human organism is concerned appears to be from -3 to +6 months. The relevance of adequate fetal feeding during the

last trimester of pregnancy, via the mother's diet transmitted by the placenta, is of the utmost importance.

Apart from fetal nutrition itself, it is often insufficiently appreciated that pregnancy is a time of preparation for successful lactation. Firstly, in well-fed women there is a physiological increase in subcutaneous fat, which represents calorie reserves to be used during lactation. Conversely, in some malnourished communities pregnant women may not infrequently reach term weighing less than at the commencement of pregnancy - in other words, far from laying up stores for lactation, they have further depleted their body reserves to provide for fetal growth, and are already on the road to nutritional "maternal depletion".

Problems of achieving adequate diets during pregnancy, especially in impoverished developing countries, have been infinitely complicated by the miscalculations and misunderstandings from the Western world, exemplified by the advice given in many obstetrical textbooks. Too often, these base their suggested diets on economically impossible and nutritionally unnecessary luxuries of food, in particular animal products, including several pints of milk per day etc. Recent nutritional knowledge indicated very clearly that the full range of all nutrients, including the essential amino acids found in the protein of animal products, can be obtained inexpensively by means of "multimixes". These are based essentially on double-mixes of cereals, such as rice, wheat, corn (maize) etc. with protein contents of plus or minus 10% which, however, lacks the essential amino acid, lysine, and legumes ranging from the soya bean, with a protein content of up to 40% to other pulses such as the red bean, the chick pea, the green pea, etc., with protein contents of plus or minus 20%, which lack the essential amino acid, methionine. The proteins of cereals and of legumes complement each other, so that cereal-legume "doublemixes" give a similar range of essential amino acids as found in protein in animal products. The adequacy of vegetable protein mixtures is indicated by their ability to cure kwashiokor, and by the proven health of vegans.

In addition to cereals and legumes, multimixes based on traditional and easily available foods can also incorporate dark green leafy vegetables (DGLV),

which are often found growing semi-wild adjacent to homes and are, in fact, traditional village-level vitamin and mineral supplements, particularly of folic acid, iron, beta-carotene and riboflavin.

Lastly, costly *animal products*, usually only available in small amounts and intermittently, can be added to further enrich the amino acid content and to fortify the mixture with vitamin B<sub>12</sub>.

A midwife's role seems quite clear. She must be knowledgeable concerning the dietary customs and habits during pregnancy in the particular community, the forms of malnutrition most commonly seen in pregnancy, and the cost-nutrient values of locally valuable foods. From this information, and with assistance from nutritionists and dietitians, it is then possible to devise diets, based on the "principle of multimixes", which are economical, based on locally available foods, culturally acceptable and geared not only to universal extra nutritional needs in pregnancy, but also to specific local deficiencies as well.

Lastly, it may be necessary for the midwife to issue appropriate vitamin and/or mineral supplements, either to selected high risk women or to all women in the prenatal period. The need for such supplements will vary with local circumstances, and needs to be investigated and defined for the particular area. In some parts of Asia where beriberi is a problem, thiamine may be required; in other goitrous areas, an intramuscular injection of iodized oil may be indicated; elsewhere a massive dose (100,000 I.U.) of oral vitamin A has been advocated in late pregnancy or at childbirth in order to prevent xerophthalmia in the infant after birth. However, in much of the world, the most usual deficiencies during the pregnancy are of iron and folic acid, and cheap supplements of these are usually indicated (60 mg elemental iron and 120 mg folic acid through pregnancy).

However, the use of vitamin-mineral supplements must be carefully considered in relation to their real need and to their cumulative cost, which can be very considerable if a programme is aimed at reaching millions of women in a large country. In all places, while supplements may be needed, the main emphasis should be by means of using locally available foods to best purpose.



## II. Nutrition of the Exterogestate Fetus

By definition in mammal man, the exterogestate fetus in traditional cultures, including the Western world until the last few decades, received all nutrients needed for growth and health in the first semester of life from human milk and from fetal stores - together with iron from the "placental transfusion" and from skin irradiation with the ultra-violet light of sunshine.

The completely unique properties of human milk has recently received additional modern scientific endorsement. Human milk, as with all other mammal milks, is a highly complex fluid, containing 100 different known constituents, totally different from the secretion of other species.

The advantages of breastfeeding are universal, but become imperative in the majority of populations in less affluent circumstances, particularly in developing countries, but also in the less privileged everywhere. Unfortunately, the trend towards artificial feeding is invading at least the peri-urban populations in developing countries with most unfortunate results, as families here possess quite inadequate incomes to purchase sufficient quantities of processed infant formula, and methods of home hygiene are such that infected feeds are certain. The result is already shown by the rising toll of marasmus and diarrhoeal disease occurring in the first year of life.

This is a world trend, unfortunately, and has considerable ill-consequences in relation to mortality and to potential long-term damage in the form of mental retardation in these young, cerebrally vulnerable infants. It also has considerable importance economically, as marasmus is expensive and time-consuming to treat, much more so than kwashiorkor.

Also, on a wider scale, the question of supplying a substitute for human milk for large population groups has economic and agronomic aspects. If such infant formulas are imported, this will plainly be a considerable expenditure of foreign currency; if, however, they are produced locally, it will mean a massive increase in food production, probably mainly in local dairy production. For example, if all the women in continental Asia ceased to breastfeed, it would

be necessary to develop a herd of 114,000,000 extra cattle!

Many health personnel in Western countries have little modern information concerning human milk or the psychophysiology of lactation, or mother-child interaction in the neonatal period. The little they learn, largely by rote from the standard textbooks is out-of-date, dull and unconvincing. The facts are otherwise, and there are many indications that, even in affluent countries, an increasing awareness of the importance of human milk in child nutrition and breastfeeding in child rearing is on the increase. For example, in the United States, the La Leche League International and in Australia the Nursing Mothers of Australia Association are having widening influence.

A great deal of recent work has been undertaken into the factors responsible for the success or failure of lactation.

In brief, as stressed by Ladas, success is largely related to *frequent stimulation of the nipple and areolar tissue*, leading to secretion of the milk-producing hormone prolactin (*prolactin reflex*), together with *confidence*, leading to an unimpaired or even enhanced psychosomatic *let-down reflex*, with *stimulation of the nipple* leading to reflex production of oxytocin, which causes contraction of the alveolar myoepithelial cells and hence expression of milk into the terminal lacteals.

The key to successful lactation is undoubtedly the let-down reflex, which, in contrast to the prolactin reflex, is affected by the mother's emotions. Confidence and assurance enhance this reflex, while anxiety or uncertainty can impair it.

In traditional societies, a young pregnant woman approaches lactation with more than confidence - rather with no question as to success and with no possible alternative. She has seen relatives in the village breastfeeding as part of normal everyday life. Her society is one in which breastfeeding is not only normal, but is socially supported as being an integral part of motherhood and often with special religious endorsement as well.

In addition, as with other social mammals, such as, for example, dolphins and elephants, man has evolved special procedures to care for the mother in late pregnancy, childbirth and during the puerperium. These usually entail activities by a culturally defined *doula* (female assistant or bondswoman), a term introduced by Raphael as a result of her survey of a wide range of human cultures. For example, in much of India, it is the practice for the pregnant woman to return to her mother's house, during the end of pregnancy, childbirth and for a culturally defined period of some weeks after birth. Here, the mother's mother and the indigenous midwife (*dai*) act as *doulas* - supplying the additional information, and the emotional, physical and social support and assistance that ensure successful lactation.

In a Westernized society, if a child is born in many maternity units, the young mother's situation will be quite the opposite. She may never have seen a baby being breast-fed and may have heard rather of difficulties and of the advantages and convenience of artificial feeding. The atmosphere of the hospital will probably be at best, indifferent to breastfeeding - if not hostile. The baby will be removed from the mother shortly after birth and every opportunity will be given for the mother to change to bottlefeeding, partly because of a lack of understanding by the health staff of the recently appreciated advantages of human milk and of an unawareness of the psychophysiological factors largely responsible for success. Under these circumstances, too often the medical staff, including the midwife, can have, in fact, an anti-*doula* effect.

Without much difficulty, the midwife can, quite easily, assume a *doula* role. Physiologically, it is clearly established that lactation is more likely to be successful if the baby is put to the breast as early as practicable and as frequently as possible, while supplementary feeds, especially if given by a bottle, need to be avoided. The baby should be by the mother's side, either in the same bed or alternatively in a crib by the bedside. If either the nursing staff or the mother is apprehensive that the baby is not receiving sufficient breast milk, or if the climate is excessively hot as in various desert countries, extra fluid in the form of boiled water can be given by cup or spoon, never by bottle which exhausts the baby's sucking abilities and also endorses bottle-

feeding as an approved method in the particular hospital. Psychologically, much can be done by confidence and approval, while the best motivators, persuaders and visual aids are women who are already themselves successfully lactating.

Time does not permit giving the details of the most appropriate forms of regimen for the modern biological maternity unit. They are, in fact, simple and easy to achieve, at least in theory. Numerous manuals in non-technical language have recently become available, notably the La Leche League's "The Womanly Art of Breastfeeding" and in the Haires' publication for nurses produced by the International Childbirth Education Association.

In Westernized societies, the information and confidence necessary for successful lactation are very much related to factors that influence the mother's attitudes in pregnancy and in the first weeks after the child is born. In both of these situations, the midwife can play a key role. She can be the prime *doula*-substitute in an industrialized society, and, in a more traditional community as a *doula*-reinforcer.

### III. Nutrition of the Transitional

The orthodox duties of the midwife are primarily concerned with pregnancy and childbirth, and with the neonatal - puerperal period. However, in many parts of the world, the midwife may be expected to, or, indeed, have to, be concerned with the supervision of the health and nutrition of the transitional "pre-school" child. For example, in rural parts of the West Indies and some other tropical developing countries, paradoxically the midwife may have too few obstetrical duties to fill her time. Under these circumstances, with the trust, contact and *entrée* into families in the area, it is logical and entirely sensible that the midwife should extend the role not only in her traditional capacity during delivery and at the prenatal clinic, but also at the adjacent Young Child (Under-5 Clinic) as well.

This is logical not only in relation to using her time most profitably, but also because of her acceptance by the local community, and because of the

close interrelationship between mother and child that is so specially imperative in many less developed tropical communities.

It is psychologically beneficial if the pregnant mother and her older, often "displaced" transitional child can be seen not only at the same time, but also by the same well-known trusted individual - such as the midwife. Additionally, the nutritional sequence in which the midwife has been involved, from the fetus to the exterogestate fetus, is inextricably intertwined with the nutritional background and the feeding of the child during the dangerous transitional period. The stores needed to supplement human milk during the exterogestate period are acquired *in utero*. Adequate lactation without maternal depletion depends on the laying down of sufficient stores in pregnancy, including calorie reserves in the form of subcutaneous fat. The length and adequacy of lactation *during the transitional period* is of much significance. Early "unphysiological" weaning from the breast deprives the young child of a valuable, if small, protein supplement.

Additionally, the midwife needs to know and promote locally appropriate infant feeding, based on the "principle of multimixes", with due attention to nutritional requirements, cultural acceptability, physiological appropriateness, culinary feasibility, availability of food (as grown or as purchased) and bacterial content.

#### *IV and V. Nutrition in the Pregnant and Lactating Woman*

As noted earlier, the interrelationship between the nutrition of the pregnant and lactating woman, the fetus and her young offspring is extremely close, intimate and important anywhere, but especially in the more precarious nutritional circumstances found in most less well-to-do tropical countries.

All of the biological phases of the young human organism - the fetus, the exterogestate fetus and the transitional - are influenced by adequate nutrition of the pregnant and lactating mother.

Conversely, the nutrition of the woman during pregnancy and lactation is

affected by various aspects of the nutrition of her offspring. In particular, the syndromes of "maternal depletion" may be mentioned, in which her often too early commencement of child bearing is followed in a malnourished young woman by repeated cycles of pregnancy and prolonged lactation, exacerbated by, at least in some communities, hard physical work and cultural food attitudes which tend to deviate more nutritious items in the diet, especially animal protein products, away from women, especially when pregnant, and young children towards males especially elder males in the society.

Such maternal depletion syndromes may be specific - that is related to particular nutrients, such as iodine deficiency goitre, vitamin D/calcium deficiency and osteomalacia, or iron and/or folic acid deficiency anaemia (with associated risk from even slight haemorrhage).

More commonly, what may be termed "general maternal depletion" occurs with evidence of loss of protein and calorie stores in wasted muscles and absent subcutaneous fat, a prematurely aged appearance and often death, sometimes associated with pregnancy in the woman's thirties. This type of syndrome was also common in the large families of Victorian Britain and elsewhere. Viewed nutritionally, its impact on child nutrition is obvious, as under most circumstances, especially in traditional village communities, the mother is necessary for the child's survival, not only for her breast milk, but also to care for the infant and to prepare his food.

Maternal nutrition in pregnancy affects *fetal stores and birthrate*, and in lactation the quality of milk produced is also altered, at least as far as certain vitamins are concerned, *particularly riboflavin and vitamin A*. However, on the whole, the mother's nutritional stores tend to be drained and depleted to supply the needs of the fetus and of the breast. Nevertheless, if the level of maternal nutrition deteriorates still further, interference with milk production occurs with a lessening output, and finally, in severe prolonged famine, lactation ceases.

Another aspect of the interrelationship of the nutrition of the mother and child is in the interaction of lactation and conception. In many

traditional cultures, longstanding ideas suggested that lactation had a child-spacing effect. Recently, reappraisal of old demographic data, more modern metabolic and histological studies, and, in particular, epidemiological field investigations in various developing countries have endorsed the folk-knowledge that successful, unrestricted and unsupplemented breastfeeding does indeed lead to child-spacing, probably mainly because the prolactin produced has an inhibitory effect on ovulation. Plainly, this effect is not complete and indeed declines with passing time. Nevertheless, on a community basis, its cumulative effect may be substantial and, in a study undertaken in Taiwan, it was suggested that in a community where lactation was successful and prolonged, it could have an effect of diminishing births by some 20%. In other words, the present decline of lactation and the initiation of artificial feeding has an anti-contraceptive effect.

Conversely, a variety of oral hormonal preparations have been developed in recent years, so that the whole subject is confused, with a large number of different pharmaceutical compounds, trade names and dosage levels. The question of their effect, if any, on lactation performance has plainly become of great concern, particularly in developing countries.

Available evidence seems to suggest that the earlier ovulation-suppressing contraceptive compounds given by mouth - this is relatively "large dose" mixed tablets, containing both estrogens and progestagens - frequently had a deleterious effect on the production of human milk, especially if introduced soon after delivery, and often made it impossible to continue breastfeeding.

However, the low dose progestagen drugs, both by mouth and by intramuscular injection, do not appear to have major ill-effects as far as lactation is concerned, and may even increase the yield. However, further investigation is needed into the effect of various types and doses of contraceptives on the composition and yield of milk in various nutritional circumstances, into possible effects on the nursing baby, and into nutritional consequences in the women concerned, especially folic acid deficiency.

What seems to be needed in less developed regions is initial unsupplemented breastfeeding for 6-8 weeks, followed by a mutual reinforcement of the proven contraceptive effects of lactation, *together with* mechanical (IUD) or hormonal means of conception control - preferably long-lasting, "one attendance" methods, such as intramuscular "Depo Provera", given initially at the postnatal clinic. Optimally, a hormonal compound is needed which is not only a contraceptive, but also has no nutritional ill-consequences for the mother and enhances lactation.

Research into these important interactions and interdependences between mother and child should be a priority in world nutrition, and there are indications that the efforts needed are being given increased emphasis.

#### *Conclusions*

It is apparent that the midwife needs to have a much wider role than that traditionally given her. This may embrace all biological phases of the mother-young child continuum, but needs to be adapted to the local needs, to the cultural pattern and to the roles of other existing staff.

In all of these, a nutritional emphasis has often been lacking and can be included easily, inexpensively and profitably. The major need is to be aware of this possibility and of practical means of translating scientific knowledge into methods that are of use and applicable in real-life circumstances.

The new wide-spectrum midwife envisaged obviously implies a re-orientation of training for her actual role rather than for what has been traditional. Basically, training must be practical, in the community as well as in the hospital, and as part of a team, working with medical staff, including obstetricians, and pediatricians as well as with auxiliaries. A realistic training field, in the homes of the community, is plainly as necessary as a classroom or hospital midwifery ward.

The content of the education of the new-look midwife, with necessary emphasis on nutrition, needs modification to include knowledge of the nutritional



needs of the different biological phases of the mother-child continuum, the composition and cost-nutrient values of available local foods, indigenous food customs, practices and habits, and the pattern of malnutrition seen most frequently in pregnancy and early childhood in the area.

Likewise, the training of the midwife must include a theoretical, and more importantly, a practical understanding of the interrelationships of the different components of the local MCH services in which she works. This can be done only by actually working in these different places. The need for nutritional surveillance in pregnancy and early childhood, especially by serial weighing, the prevention of nutritional conditioning infections by immunization, the use when indicated, of appropriate vitamin-mineral supplements, and the devising and promoting of improved diets for mothers and young children (with special reference to nutritious multimixes based on local foods), and the encouragement of family planning to space children, with nutritional benefit to both mother and baby.

Health staff and health services all over the world have tended to become over-rigid and not necessarily geared to dealing with actual local problems. This has certainly been the case with midwives in some regions. There is a need to reconsider their roles imaginatively in relation to the actual problems and other resources of the particular area. The midwife's major role will always be much related to the traditional one of the mechanics of pregnancy and childbirth. However, this can, in fact, be very easily expanded to a much wider preventive role involving not only the mother and newborn baby, but also the older child, the transitional. There is a tremendous usefulness awaiting the broad-spectrum midwife of the future. The need is to realize the great potential often being wasted at the moment and to deploy the imagination to devise suitable roles and training programmes to convince even the more conservative concerned with the education of midwives.

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*Note: If anyone would like information on references please write a note to the editor.*

## THE USE OF VOLUNTEERS IN COMMUNITY NUTRITION PROGRAMMES

*by*

A. C. K. Antrobus

Any comprehensive plan for community action of whatever nature must take into account the element of human resources. The requirements in specific areas of expertise and relevant skills need to be carefully reconciled with the availability and adequacy of these resources. Likewise in any project or programme that is community oriented there must be recognised yet another component - that is, the desirability of some measure of active participation by the people themselves.

It should, therefore, be apparent that in situations such as exist in the developing Caribbean where problems of shortages in skilled and trained manpower occur side by side with the clearly defined need for the community approach to the exercise of development, there must be ample scope for the imaginative, ingenious, and even creative use of the existing, limited human resources.

In some cases this may be achieved by the creation of a new cadre of worker, usually at the sub-professional level, requiring a relatively short period of training. Recent examples of this are the assistant nurse and the community health aide on the one hand, and the dental assistant and the animal health assistant on the other. And in the field of nutrition and dietetics are the dietetic assistant and the food service supervisor.

Associated with every new cadre of worker introduced into any already established order is a long and arduous gestation period often accompanied by (habitual) abortion, birth pains, congenital anomalies or respiratory distress. And, at times, the effects of these early adverse circumstances may endure much longer than is good for the health of the species. In any event these changes require central government decision which often means phased introduction and, inevitably, delayed implementation in several of the very locations that stand most in need of this novel intervention.

For purposes of this paper, attention will be focussed on the small, remote, rural areas that represent the "black holes" of poverty and childhood malnutrition, and which so often bear the additional burdens of inadequacy in all basic services that are taken for granted by their more sophisticated and pampered fellow citizens in the urban areas.

Let us now look specifically at nutrition programmes against this background: In the absence of the more radical approaches to social and economic reform, the solution to the problem of childhood malnutrition must of necessity lie predominantly in the area of nutrition education and community development. At best, the professional resources of relevance in any rural district are likely to be a district nurse, an agricultural or home economics extension officer, school-teachers and, perhaps, a community development officer. The reality is that these are seldom, if ever to be found all together in any one district; besides which, the aggravating problems of staff vacancies seem to bedevil the services of the under-privileged areas more than elsewhere.

These areas, therefore, represent special stress situations which call for a type of action outside the traditional, stereotyped responses, and which can gain nothing from the negative philosophy which postulates that "all is hopeless - nothing can be done".

The Freedom from Hunger Campaign project on the Evaluation of Nutrition Education which was started in 1971 in the Lambs River district of Westmoreland, Jamaica provided an opportunity to face this challenge of how to educate people out of malnutrition.

The sub-district of Berkshire is the most remote and backward and the poorest in the area, is farthest from the health centre - some six miles away, has rough, unpaved roads, no electricity, a precarious water supply, and an abundance of young children more than 20% of whom were at least moderately malnourished, (i.e. below 80% of standard weight for age) in 1971. Visits to this area by the public health nurse were as rare as Christmas parties, and for anyone to contemplate travelling to the health centre he had to feel desperately in need of attention. It was therefore not at all surprising that the district

doctor identified Berkshire as "the place to go to find poverty and malnutrition".

It was into this area that the concept of volunteer home visitors was going to be tried. With the help of an energetic field assistant indigenous to the district and of a few public meetings, and other indefinable and probably unknown processes enough women folk presented themselves as volunteers to enable a start to be made in their training and orientation.

The concept of a volunteer home-visiting service was perceived as part of a philosophy of replicability - doing something that could be repeated in similar situations elsewhere in Jamaica, the Caribbean and perhaps in the less developed world at large (if it proved successful, of course).

The principles on which this aspect of the project was built up were:

- (1) Women of any age who had already left school and who lived in the district would be acceptable.
- (2) Home-visiting would be a part-time undertaking done at whatever time best suited the volunteer (and her homes).
- (3) A period of training in basic, simple nutrition relevant to their needs would be given to all volunteers.
- (4) Each volunteer would be provided with a simple reference manual and, as far as possible, a few simple visual aids, e.g., flash cards.
- (5) Each volunteer would keep a record of her visits to be submitted monthly to the field assistant.
- (6) Periodic meetings (usually monthly) would be held between volunteers, field assistant and project director.

The visiting plan was that each volunteer would be assigned four homes with children under-5 (especially if they were under-1 year and regarded as being "at risk" in terms of malnutrition). This would be normally for a four-month period during which a target of twelve visits was aimed at.

The subject-area covered:

- (1) *Breast feeding* - with a view to its encouragement; special emphasis was to be directed at mothers planning to stop prematurely.
- (2) *Multimixes* - to show that many everyday foods could be suitably prepared for infant feeding in a way that made them palatable and nourishing for young children.

Practical demonstrations of multimixes in the home represented an important input.

- (3) *Food purchasing* - especially milk. The cheapest adequate milk product identified (in Jamaica - Semilko) was to be "plugged" by the volunteers. Of course, it was necessary to ensure that the product was available.

Other basic sensible food purchasing advice was to be given.

- (4) *Kitchen garden* - the idea of growing one's own food, even in a table-top-sized plot was to be encouraged, especially easily cultivated, quick growing crops like calaloo.
- (5) *Use of clinic* - to be promoted whenever feasible; and this was determined mainly by distance. The homes visited were to be encouraged to make more use of the child welfare clinics, and the family planning service.
- (6) *Hygiene and sanitation* - especially as they relate to child care and feeding were also to be given priority, simplicity being the watchword.

It is estimated that a volunteer spends between three and four hours a week away from her own home making visits each of which takes approximately twenty - thirty minutes. In some cases volunteers work in pairs especially when they can bring together two or more mothers into one home for food demonstrations.

Having given this outline I immediately sense the need to answer three urgent questions that inevitably arise:

- (1) What is it that keeps the volunteers going?
- (2) How acceptable are the volunteers to the people in the homes that they visit?
- (3) How successful have the volunteers been in meeting the objective of combating malnutrition?

In reply to the first question, it was my view that incentives as such should be looked at carefully and seriously. With the best will in the world and the greatest dedication, there must be but a few people in the lower income groups of society (other than the religiously motivated) who could be expected to go on making a free contribution of this kind to their communities. Hence, there has been the payment to each volunteer of a small, or rather minuscule, incentive bonus of \$5.00 a month which we have labelled a "transport allowance". Whether this has been the main factor or even an important factor in keeping the volunteer programme alive for two years we do not really know and there is no fool-proof way of finding out.

The need for identification with someone or some organisation that lends a "touch of prestige" to the volunteers' activities is also extremely important. To achieve this such organisations must encourage the feeling of participation and a sense of belonging among the volunteers in an open and genuine way. The volunteers must understand and believe that what they are doing is relevant and important; otherwise the cause is lost before it is properly taken up. Moreover, fostering a spirit of camaraderie, creating a thirst for new comprehensible knowledge, and sponsoring some social activity from time to time among volunteers all contribute to making the means to the elusive end of continued interest and service.

Regarding the acceptability of volunteers in the homes, this has been unquestionably a success. In very few homes - no more than about six out of approximately ninety homes - has there been difficulty between volunteer and householder; on the contrary, in several unvisited homes there has been

expressed a clear desire that they should be visited by volunteers.

As far as the third and vital question of objective results go, I cannot now provide you with an answer. All I can say is the impressions (both of volunteers and field workers and of the district doctor) are that there are fewer cases of severe malnutrition than previously, that breastfeeding seems to be going on longer and that the multimix idea is catching on.

Nor should one overlook the very valuable "spin off" from this training and intervention of producing in a small district women who have grown in confidence regarding their usefulness as citizens, for whom this type of association with a project is very meaningful, and to whom the knowledge and experience gained will be a permanent asset in their future roles, especially that of mother.

Volunteer programmes are, however, not without their difficulties; in fact, there are many, but they are no different from what obtains in other more sophisticated services. There is the whole mixed bag of frustration, lack of staying power, petty jealousy and internal friction, laziness and indifference and sheer incompetence. But with resolution and leadership all these can all be buffered and overcome. That is why one of the most vital assets to this programme, after the initial motivation, is the supervision, coordination and encouragement offered by an energetic, capable and humane field assistant.

Once there is a clearly understood community purpose, finding a dynamic leader from within the establishment (or other community organisation, if it exists) is the next strategic step. Add a willing tutor in nutrition and the volunteer concept becomes possible.

Remember this is an approach designed to meet the needs of the most deprived sections of the population, many of which will not have the service of even a community health aide for several years to come. Hence it might be useful to note that a small village of two hundred homes with say three hundred children under-5 can, on the salary of one community health aide providing remuneration and equipment for six volunteers receive useful, practical information and guidance in young child feeding sufficient to give hope to the

disadvantaged and the concerned.

I hope in the near future that the results of the Lambs River Project\* will lend substance to the views I have expressed.

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*\*The Report on this Project is now completed and is available on request from CFNI.*

*This paper was delivered at the Annual General Meeting of the Caribbean Association of Nutritionists and Dietitians held in Jamaica in June 1974.*



## NUTRITION NEWS AND OPINION FROM THE CARIBBEAN

### *TABOOS ABOUT BREAST FEEDING*

*By Margaret Hope*

Superstition, taboos and folk traditions can undermine nutrition and import substitution programmes. This situation confronts nutritionists, public health nurses, social workers and doctors as they discuss nutrition with women in the Caribbean.

Campaigns are being conducted in some of the Caribbean countries to encourage women to return to breast feeding advising that breast milk is the best and cheapest milk for their babies. But, ignorance reinforced by superstitions and taboos deter these sincere, loving well intentioned mothers.

Shocking superstitions surrounding breast milk include:

- (1) Milk given to babies at night sours their stomachs, so cooling teas (bush teas) are given in its place.
- (2) If a nursing mother has sexual intercourse with a man other than the father, while breast feeding, the baby will either receive bad milk or pick up a germ.
- (3) Unless a drop of breast milk is first squeezed into the rectum of the baby, milk from the breast of a woman who has been working in the sun or sweating, will make the baby sick.
- (4) It is believed that if a nursing mother has been engaged in manual labour or other activities, for example, ironing, she is considered to be hot and her breast milk becomes unsuitable for nursing infants.
- (5) If a nursing mother is engaged in a quarrel, her breast milk then becomes sour, spoilt and unsuitable for consumption.
- (6) If a mother does not breast feed for a day or two her milk becomes spoilt.

(7) Mother's milk gives babies worms.

(8) Fish inhibits breast milk in nursing mothers.

One of the best examples of how locally or regionally grown food can be prevented through superstition from contributing to the nutritional well-being of people, and particularly children, is the belief that many of them produce worms and worm fits. These items include rice, sweet potatoes, yams, milk, any fibrous or stringy vegetable, guava, tamarind and most green and sour fruits, cod fish, meat and fresh fish.

Eggs too receive their fair share of superstitions. Pregnant women should not eat eggs, because they will either make the baby too big and give trouble during confinement or they will make the baby cry like a fowl when born. It is believed that eggs given in early infancy make children stupid; eggs give indigestion if consumed at night; eggs increase fertility and can cause a child to get pregnant.

Deep sea fish is not considered wholesome nor frozen fish nutritional. It is also held that white fish and sardines cause mothers to have heavy discharge after delivery. Okra is considered a good lubricant for quick labour and delivery. Salted food, fed to young children, is felt to retard teeth growth. Cheese and fish are also said to rot the teeth. It is also believed that babies should not be offered food until they have teeth. It occurred to me that although these examples of the myths and superstitions in the region were picked at random most of them militate against mothers and children who make up sixty five per cent of the whole Caribbean population and are the most vulnerable to health hazards. Statistics show, for example, that the rates of sickness among mothers are six times higher in Caribbean countries than in more developed countries.

#### *Threat*

The food taboo is a problem which nutritionists and health experts in our region, as well as those of other developing countries, have recognised to be a serious threat to the success of nutritional as well as food

substitution programmes. It is a problem too which will also confront national and regional economic planners and policy makers. It may be economically advisable, for example, to ban or impose quantitative restrictions in imported Vitamin C drinks, because we can now produce enough regional or local substitutes, cherry juice, orange juice and so on.

Superstition can pose serious problems for such policies, however, when one is faced with a substantial number of persons who believe that West Indian cherries cause appendicitis. A Caribbean Social Worker in a paper which he presented recently to a seminar on Food and Nutrition Policy for St. Lucia pointed out some of the implications of superstitions and beliefs for the nutritional well-being of societies. He said, "Deprivation of essential foods, based on fads, fallacies and superstitions usually result in poor, unhealthy persons, families, communities and societies who become very susceptible to disease and ill health, thereby creating high mortality rates".

A number of people hold the view that out of the evil of world inflation and food shortages may come some good for the Caribbean people. Already there are indications that they are right. These two factors have been instrumental in forcing a number of people in the region to thumb through the pages of the past in search of old practices, directions and recipes for the utilisation of long neglected locally grown foodstuffs and other raw materials. The import displacement campaigns must continue and must be intensified. However, a note of warning should be sounded now, if we are to avoid some serious long-term problems. As we unearth old time recipes and old time practices, there is the great danger that we will excavate in the process the old superstitions, the myths and taboos, which have traditionally been associated with many of the food items produced in the region.

It would seem that there are three major problems, other than our export orientation, which can affect the success of improved nutrition and import substitution campaigns in the region. We hope in this series of articles to exorcise them: firstly the taboos and superstitions which surround certain foods which result in a resistance to their usage; secondly the economically and culturally induced behavioural patterns and health factors which militate against

the sensible allotment, preparation and use of foods in the family; thirdly, general ignorance of the nutritional content of the locally produced food items, hence the lack of awareness of the "mixes" which would guarantee families well balanced meals.

George Iless in "Jottings" said a mouthful when he described superstitions as "premature explanation that over-stays its time". Each one of us, I am sure, holds some such belief with a great deal of conviction and probably with good reason. (GIS).

*CAJANAQUOTE*

*The solution of the world's nutrition problems depends on political decisions if the results of research in the laboratory, in the hospital, and in the field are to be applied.*

*Michael C. Latham*

*"Starvation of politics, or  
politics of starvation?"*

*Lancet (1969) II, 999.*

*A DISGRACEFUL EPISODE**By J. M. Gurney*

We know of a very recent incident where a young lady had her first baby in a well-known Kingston hospital. She had told her doctor and the nurse that she wished to breastfeed. The delivery was normal and the milk flow started early and was copious and her breasts were rather uncomfortable.

While in hospital, the mother was given two little tablets and was told that they were for the breast discomfort. She was not told they would reduce the flow of milk. Later the baby was brought to her along with a disposable milk bottle containing a commercial baby food. When the mother asked why the artificial milk formula was brought to her, as she intended to breastfeed, the nurse told her that the two tablets had been "to settle the milk" (reduce the flow), and advised her to give the 'formula' after breastfeeding. The mother had doubts about this advice and asked the Ward Sister, when she came, if the artificial milk was "some sort of vitamins". She said it was ordinary 'formula' and, on being asked said that since the mother had so much breast milk, it was not necessary to give the bottle too.

Luckily, the mother managed to keep on breastfeeding (she was both knowledgeable on the subject and well motivated) and her baby is growing well. A less confident mother may well have been unable to continue, as a result of the tablets and the bottle. Such episodes are not uncommon - for example see the article by Peter and Alison Heywood in a previous issue of 'Cajanus'.<sup>1</sup>

In our view this demonstrates an interference with the rights of the mother and her infant. To give such substances without asking the mother - particularly to a mother who had expressed a wish to breastfeed - is unethical practice and displays ignorance of the mechanism of breastfeeding, an ignorance that should not be found in an obstetric ward.

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<sup>1</sup>Heywood, P. and Heywood, A. (1973) "Please breastfeed your baby - and keep the bottle for yourself". *Cajanus*, 6, 95.

The establishment of successful lactation is an entirely natural process. However, in a community in which lactation is not universal, it is not easy. Small things and small worries can disturb the milk flow. If the flow is disturbed the baby becomes dissatisfied, the mother anxious and her milk flow further reduced. A vicious cycle leading to lactation failure may be set up.<sup>2</sup>

In this case two factors were introduced. First the tablets to reduce the flow - it is natural to have a copious flow and dangerous to artificially reduce it - it will settle quickly on its own to suit the baby's needs. The second factor is the bottle. If a newborn baby is given an alternative feed he will take less breast milk; this, particularly at the early stages of lactation, will inhibit the production of milk and thus endanger the success of lactation.

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<sup>2</sup>See for further information, the article "How Breastfeeding Really Works" by Dr. and Mrs. Jelliffe in 'Cajanus', Vol. 4 (1971) p.1.

## NEWSPAPER CLIPPINGS

*IS BABY FOOD JUNK?*

By John E. Peterson. *The Daily Gleaner (Jamaica) 27 February 1975.*

Washington - The first "junk foods" most Americans consume are spoon-fed to them by their parents from little jars bearing the labels Gerber or Heinz or Beech-Nut. That is the contention of a new report on commercial baby foods by a committee of doctors, nutritionists and other health personnel for the Centre for Science in the Public Interest.

Entitled "White Paper on Infant Feeding Practices," the report charges that: Manufacturers often load baby foods with sugar, starch, salt, spices and sodium nitrite - all of which, while enhancing the taste and texture, are non-nutritious and potentially hazardous to health. The U.S. Federal Government and members of the nation's medical profession should, but do not, provide objective information to mothers about the benefits of breastfeeding. Patricia Hausman, the researcher at the centre who coordinated the report, hopes it will encourage the public to give a little more "thought for food".

Virtually the sole form of solid food fed to infants under six months of age is commercial baby food, the report notes. "The composition and marketing of baby foods have been guided to an unfortunately large extent by economic factors such as minimizing manufacturing costs, maximizing shelf-life and catering to the taste buds of infants and parents," the report states. Hausman particularly criticizes the addition of heavy amounts of sugar in many baby food products. "Perhaps the worst offenders are baby food desserts with names like blueberry buckle, implying that they are loaded with fruit, when the main ingredient turns out to be sugar," she said. "Infant desserts while containing the most sugar, are not the only culprits. Many baby cereals and strained vegetables also have a high sugar content," said Ms. Hausman. "The preference for sweet food appears to be innate in humans and manufacturers take advantage of the fact that both parents and infants prefer sweetened products," she said. Beech-Nut, for instance, adds sugar to sixty-six per cent of its products, Heinz to sixty-five per cent and Gerber to fifty-five per cent, states the report. By putting high percentages of sugar in foods that do not naturally

contain appreciable amounts, the manufacturers are becoming, in effect, "sugar junkies," she believes.

"Regular eating of sweet foods in infancy may stimulate a preference to sweet tastes that will continue into childhood and adulthood," the report says. Thus, it concludes, it is no accident that sugar consumption in the United States now exceeds one hundred pounds per person per year. And it points out that numerous studies by widely respected scientists in recent years have linked high sugar consumption to increasing rates of arteriosclerosis, diabetes and hyperactivity among children, not to mention tooth decay.

The report also comes down hard on other unnecessary ingredients in baby food such as modified starch, salt, spices and sodium nitrites. "Modified starches disguise the high water content of many baby products and deceive the consumer," Ms. Hausman said. "Such starches," she added, "are used almost exclusively in combination foods such as Beech-Nut's Turkey and Rice with Vegetables and Heinz's Vegetable, Beef, Dumplings and Bacon. The starch prevents the ingredients from separating and thickens the food artificially."

Salt, like sugar, is added to baby foods to improve the taste - not because it provides any nutritional function. Seventy-one per cent of Beech-Nut's products, seventy per cent of Gerber and fifty-five per cent of Heinz's contain salt, the report says. Sodium nitrite, which acts as an artificial colouring and flavouring in baby foods, may react with other chemicals in the body to form nitrosamines. Small amounts of nitrosamines have induced cancer in animals during laboratory experiments. Ironically, Ms. Hausman observes the nitrites are not needed as preservatives as they are in bacon, ham and other cured meats, because all baby foods are heat-sterilized to kill micro-organisms and spores. While researches at the centre can readily determine if a baby food contains one of the unnecessary ingredients, they have been unable to determine exact percentages. And repeated requests to the baby food manufacturers to disclose these additives have been rejected, Ms. Hausman said. But she is hopeful that situation may change in the near future. A group of fifty-eight U.S. Congressmen have joined the centre and another public interest group, to petition the U.S. Food and Drug Administration to require full ingredient disclosure and percentage



labelling on all foods. If the FDA rejects the petition, Rosenthal and others have indicated they would sponsor legislation that would require such labelling. Ms. Hausman, however, believes, even stronger measures may be needed. Among other recommendations contained in the report are one's urging that all non-essential additives be deleted from baby foods and that the federal government launch a campaign to restore the lost art of breastfeeding.

Ms. Hausman notes that manufacturers of commercial formulas are constantly leaving free samples with doctors and that many hospitals present mothers with a week's supply of formula when they check out. Outside of the LaLeche League, an organization to promote breastfeeding, there is no widely organized campaign promoting the advantages of mother's milk, the report says.

*QUESTION OF SURVIVAL*

*From The Jamaica Daily News (Jamaica) 3 March 1975*

Condensed milk is up again. And counter flour. And malnutrition.

Just over a year ago, the Council of Voluntary Social Services (CVSS) told the Government that it was badly worried about the way the rising cost of living was affecting the poorest people. The Prime Minister asked the CVSS if they could make some concrete proposals about a way to make things easier for the poor.

On 8 March last year, the CVSS sent in three proposals. The first suggestion was that all people who were getting assistance from the Government through the Poor Relief programme should get food, including protein, from the proposed food bank, and that they should get at least \$4.00 a week, and extra for rental and clothes if necessary. I do not really know what happened about the food bank business, but you will remember that the scandalous allowance of \$2.00 a week went up to the equally scandalous \$2.50 a week. And that was all. That was the sort of money that poor old people had to live on, and still have to live on, while we are shouting about a minimum wage of \$15.00 or \$25.00 or \$35.00 a week, "since nobody can live on less than that"!

The second recommendation was that the prices of canned and pickled fish as well as cornmeal, counter flour, brown rice and dried peas should be kept where they were; that we should stop burning pig tripe, and sell this and other pork parts along with lard at low prices; that soya beans and molasses should be produced and encouraged; and that the Nutrition Products Centre should be expanded to help provide for babies, more basic-school children, and other people in special need.

*Little Effort*

Within weeks of this proposal, both cornmeal and counter flour had gone up, and we have seen little effort to keep poor people's food at a price where they can afford it. Semilko, provided at the Clinics for poor people's babies, has risen from twenty-five cents a few years back to sixty-five cents, and the

people at the clinics say that mothers buy less of it now. Is it any wonder that doctors report an increase in the amount of serious malnutrition that is affecting children now? The CVSS pointed out a year ago that "the increase of malnutrition is inevitable" when it becomes more and more difficult for poor people to get enough protein.

It is said that the Crash Programme wages are supposed to be helping the poorest people to buy food at the higher prices. In that way, you could say that food is being subsidised by the Government for those people. But let us remember that the Crash Programme money is not reaching all the poorest people; and what about the very old people with their \$2.50 a week? The new special shops are probably helping some people - especially people who buy and sell, apparently. But again, there are lots of people who are left out. Clearly there is a need for certain basic foods to be kept cheap, and apparently this is the reason why Dawn condensed milk now remains at seventeen cents. But this is where the third proposal of the CVSS is important.

The CVSS pointed out the need for a careful educational programme to be carried out to help the public to understand the value of the foods being encouraged, to let them acquire the taste, and in fact to teach people to accept what is good for them and not too expensive. How much advertising has been done for Dawn milk? How many people know about the advantages of having soya in it? Have there been any free samples? Maybe it is produced because the Government says it has to be produced, but nobody really cares whether people buy it or not.

The way prices of just about everything have been going up, especially in the past year (by the way, what about the children's bus fares?), we cannot just talk about a minimum wage. We have to talk about a minimum diet. And we have to make sure that every jack man in Jamaica can get that food for himself and for his children - now!

## BOOK REVIEW

*HEALTH CONDITIONS IN THE AMERICAS, 1969-1972*  
Pan American Health Organization, Washington, D.C., 1974.  
PAHO Scientific Publication 287. vii + 226 pages. Price: US\$2.00

As its title implies, this book presents basic statistical data on health conditions in the Western Hemisphere for the period 1969-1972. The sixth in a series begun in 1954, it serves as a compendium of recent information available for each of the countries of the Region. Its purpose is to provide a basis for learning more about the health situation in each country, for comparing the situations in different countries, and for projecting future trends.

The main sources of data for this and the other books in the Health Conditions series are the replies by the Governments of the Region to annual PAHO and WHO questionnaires on morbidity, mortality, natality, vaccinations, health services, and health resources. Other official reports to PAHO, WHO, and the United Nations, as well as national publications, also serve as sources of information.

The volume is divided into two sections, an 87-page narrative analysis supported by tables and charts, and a 112-page appendix that presents detailed data in tabular form. The narrative section contains chapters on population, vital statistics, communicable diseases, health services, hospitals, environmental sanitation, and health manpower - the largest chapters being those on vital statistics and communicable diseases. The appendix devotes particular attention to mortality data, in addition to providing coverage of other subjects dealt with in the text.

As noted in the introduction, there is still much need to improve the quality, quantity, and coverage of health statistics in the Americas. Nevertheless, this latest publication in the Health Conditions series amply demonstrates the great advances achieved in statistical reporting during the twenty-three years covered by these reports.

## RESEARCH PAPERS

### *I. FAMILY FOOD CONSUMPTION AND INTRA-FAMILIAL FOOD DISTRIBUTION IN ST. LUCIA, 1974*

*By E. Bernez, J. M. Gurney and P. Jutsum*

A National random sample of one hundred and thirty households were investigated by the recall method to get data on the overall household food consumption as part of the National Food and Nutrition Survey. In about half of these households, the individual consumption of a preschool child was also investigated using the same informant and the recall method.

The average household satisfaction of energy requirements was 88%; protein 140%. Thirty per cent of the preschool children investigated had their energy requirements significantly less well satisfied than did the household as a whole. Very few preschool children failed to meet their requirement of protein.

The results suggest that preschool children, who are regarded as a group vulnerable to under-nutrition in the physiological sense, are also at risk of deprivation even in a household where the overall food availability exceeds, or does not fall far short of, the total recommended daily allowance for all its members.

### *II. EVALUATION OF NUTRITION EDUCATION IN RURAL JAMAICA*

*By A. C. K. Antrobus*

A project for the evaluation of nutrition education was undertaken in Lambs River, a rural district in Jamaica between 1971 and 1974.

The ultimate objective was to determine whether nutrition education *per se* was capable of effecting an improvement in the nutritional status of a community, using children under five years of age as the index population.

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*All these Research Reports are of seven papers related to nutrition that were presented at the Twentieth Scientific Meeting of the Commonwealth Caribbean Medical Research Council. The meeting was held in April in St. Lucia.*

Specific intermediate objectives were set-out, aimed primarily at influencing the eating habits of the young child in the direction of better nutrition, among them - the use of multimixes, and Semilko (a subsidised half-cream powdered milk), the wider practice and prolongation of breastfeeding.

The educational inputs were characterized by the fact that they came exclusively from the people of the district assisted by some guidance and training from outside. The major innovative measure was the establishment of a corps of volunteers to visit homes with young children.

The results show that there was no improvement in the nutritional status of the index population at the end of the period, but that some important intermediate objectives (including those listed above) were achieved.

It is concluded that even in situations of poverty there are human resources capable of contributing effectively to community nutrition education, and that with refinement of their role, such contribution could be enhanced.

### III. IMPROVEMENT OF YOUNG CHILD NUTRITION IN HANOVER PARISH

*By M. Alderman and A. D'Souza*

Jamaica has sufficient foodstuffs to provide adequate calories and protein for all its people. Nevertheless, more than 10% of children 0-4 years are moderately or severely malnourished, and these youngsters account for almost half of all deaths in rural communities. To reverse this grim picture, a Young Child Nutrition Programme initially tested at Elderslie, St. Elizabeth, was extended to serve the 7,000 under-five children of Hanover Parish. Locally recruited and trained Health Aides have been assigned responsibility in each of 153 districts where 30-90 children live. These aides have been trained to weigh all children monthly, identify malnourished children by plotting weights on graphs premarked with the Gomez classification, and then to make regular visits to the homes of the malnourished to help mothers maximize the nutritional value of their children's diet by improved utilization of available foodstuffs. A clinician-supervisor, travelling by Land Rover, held 86 monthly field clinics (6 to 8 per day) at sites which permit each aide to be seen, the records

of all children to be reviewed, and malnourished children to be examined. The programme began in Eastern Hanover in July, 1973, and was extended to the West in July, 1974. Young Child Malnutrition and Mortality have both fallen by more than 60% in an appropriate step-wise fashion following introduction of the programme in the East and West.

Since this epidemiological model relies on locally available resources to improve Young Child Nutrition it appears suitable for widespread replication throughout Jamaica.

IV. *BEST NUTRIENT BUYS FOR THE BARBADIAN FOOD DOLLAR*  
By J. Gibbons and F. Ramsay

This study was undertaken to determine the nutrient-cost values for protein and calories of basic food items so that consumers could be educated as to the best nutrient buys for their food dollar.

The average cost of food items high in carbohydrate and in protein were compiled from three supermarkets in Bridgetown in June 1974. With the aid of food composition tables and net protein utilization values, the cost of 40 gm. reference protein and 2,500 calories (the daily requirements of an average man) and in the case of baby foods the cost of 14g. reference protein and 900 calories (the daily requirements of a 6-11 month infant) were calculated and compared to the cost of regular food items.

Powdered skimmed milk, evaporated milk (large size) and lactogen were the best buys in milk; commercially prepared baby foods cost four or five times as much as regular foods. In descending order the best buys in calories were dark sugar, pigeon peas, rice, flour, margarine, sodabix, cornflour, macaroni, breadfruit, cheddar cheese and bread; the best buys in protein were pigeon pea, cheddar cheese, skimmed milk, dolphin, salted codfish, flour, herring (canned), beef (tripe, liver), evaporated milk, macaroni, turkey wings, corned beef, ground beef, eggs and whole chicken. The nutrient-cost values of candy, carbonated beverages, baby foods, cornflakes, corn oil, ham, pork chops, bananas and white potatoes were prohibitive. Contrary to the general belief, calories were more expensive than protein in this study.

This study provides objective data on which to base dietary advice to mothers of undernourished infants and re-emphasises the importance of the limited role of calories in improving the nutritional status of pre-school children in Barbados.

V. *SOME NORMAL VARIABLES IN PHYSICAL AND PSYCHOMOTOR DEVELOPMENT  
IN 401 JAMAICAN INFANTS UNDER 2½ YEARS*  
By M. Thorburn

The realisation of the importance of early detection of mental handicap, the contribution made by environmental deprivation and malnutrition to this and recent research on Jamaican children has led to an increasing need for a tool for early assessment suited to Jamaican children, and data on normal development.

This paper describes the methodology of a project using the Bayley Scales of Infant Development on a cross section of Jamaican children and some of the normal variables in physical and mental development.

427 children were tested at 3, 4, 5, 6, 8, 10, 12, 15, 18, 21, 24, 27 and 30 months by a group including a doctor, 3 medical students, 3 teachers, a psychologist, a pharmacist and a nurse. They were identified and tested in well-baby clinics of the University Hospital, Department of Social and Preventive Medicine, and corporate area, in homes in Kingston and in a Day Nursery.

The Bayley Scales mental scale was used in all children and the motor scale up to one year, in the prescribed manner. All children were tested with the mother or caretaker present.

24 children were excluded on the grounds of inadequate information or testing, or abnormal history.

In the remaining 403, the mean anthropometric measurements of head, arm circumference, weight and height were very close to the standards used for the National Food and Nutrition Survey of Barbados, with slight differences in arm circumference.



The overall mental score was:

Males: Mean score 106.3, S.D. 16.93 and

Females: Mean score 109.2, S.D. 17.67

The motor score was:

Males: Mean score 110.16, S.D. 17.18

Females: Mean score 113.35, S.D. 18.31

These means were higher than the norms for the U.S.A. as obtained by Bayley. The mean score for each age group was over 110.0 up to 8 months of age and fell to 97.0 at 30 months.

VI. *BACKYARD DAY CARE NURSERIES IN JAMAICA*  
By R. Hall

This presentation summarizes results of an investigative study to determine the use made of backyard-nurseries and associated factors - using census type survey, questionnaire and observation.

In a population of 6,409 from 1,360 households, 32 were classified as backyard-nurseries.

Childminders were all women, half being sixty years and older. None had formal training in child care. The majority reached around grade 5 or 6 in primary school. Two-thirds desired training. Three-quarters gave their reason for this work as 'love of children' and/or wanting 'to help out'. Two-thirds were satisfied with arrangements made. One-quarter made no charges. The remainder had fees varying from \$2.00 to \$6.00/week.

Half the nurseries had two or more children each. Food preparation, feeding equipment and storage were no less than that in the children's homes. Nursery hours are arranged for mothers' convenience - more than half the children leave after 6.00 p.m.

The child care workload is shared as nearly all mothers provide clothes, diet and do their children's washing. Half of the childminders get assistance

from relatives without charge.

This is a preliminary study and illustrates that many backyard nurseries are in existence; they are filling a useful and necessary role; many advantages have been identified; that further in-depth evaluation is indicated and above all, efforts should be made to identify them with a view to upgrading those which have potential.

VII. AN EVALUATION OF THE QUALITY OF VERBAL STIMULATION IN  
THREE DAY CARE CENTRES IN KINGSTON, JAMAICA  
By S. McGregor and P. Desai

In Kingston there is a great need for more day care centres and there is also a new demand for these centres to promote the optimal development of each child. Children's intellectual and social development depends to a large extent on the quality of stimulation and adult-child interaction available to them. This aspect of the services presently being given to children was evaluated.

The study was carried out in three day care centres serving very poor areas. In each centre the pattern of speech of each member of staff and the quality of verbal stimulation available to the children was assessed.

In all centres the non-supervisory staff spoke little to the children and their talk contained a high proportion of 'controlling' remarks. There was very little staff-child interaction. This pattern of speech was thought unlikely to support optimal language and general development in the children.

Some interesting differences and similarities were found between the centres.

Staff in centre I used significantly more controlling remarks than those in the other centres. In the centre where there was a staff training programme the verbal style of the trained staff was not different from that of the untrained staff. Children in centre III were spoken to more often and with fewer controlling remarks than those in the other two. These differences and similarities suggested that the general organisation of the centres and

the quality of the supervisors' speech were important influences on the verbal style of the staff, and further indicated that the presence of a nursery school teacher in one of the centres greatly improved the environment of the children.

CAJANAQUOTE

*"In talking about nutrition and economics, the first problem is to get across a basic nutrition plan. People need far less food than they think, and they need far less of the foods they think are 'good for them' than they believe."*

Wendy Matthews

*In: Economic aspects of nutrition: practical advice on family budgeting in Nutrition, 28, 16-21 (1974).*

*(The article refers to conditions in Britain).*

## LETTERS TO THE EDITOR

*From John Kevany, Trinity College Medical School, St. James Hospital,  
Dublin 8, Ireland.*

*Dear Sir:*

*Just a note to comment on our use of 'Cajanus' in an undergraduate training programme here in Dublin.*

*Being somewhat separated from the mainstream of information on nutrition in developing areas, I have been using 'Cajanus' as a source of material for our diploma programme for nutritionists and dieticians. For the students committed to overseas programmes, it provides up-to-date information on problems, activities and attitudes in other parts of the world. For those that remain, it provides an important insight into other cultures and conditions.*

*'Cajanus' is unique in providing a wide range of information of interest to varying levels of expertise, which is not found in more specialized journals. I would strongly recommend it for reading lists of undergraduate and graduate training programmes in applied nutrition in "developed" areas, particularly those with assistance links with other countries.*

*Best regards,*

*John Kevany, M.B., M.P.H., M.F.C.M.*

From June A. Gibbons, 212 Cascadilla Hall, Cornell University, Ithaca, N.Y. 14853.

Dear Sir:

I was very pleased with the two main topics, "Staple Food for the Caribbean" and "Reports from the World Food Congress", discussed in the current issue of 'Cajanus'.

Although the World Food Congress was disappointing in some respects, the "People's Principles" that were set forth have a direct bearing on the re-evaluation of our Food and Nutrition Policy. The first principle states that: "Every human being has the right to a regular supply of food adequate for his or her total development. Basic nutritional needs in infancy must be met at whatever cost".

Childhood malnutrition has been, and still is, a serious problem in the Caribbean area. Several intervention-type programmes have been carried out, but only with moderate success, as they tend to treat the symptoms rather than the cause of the disease. It is now being recognized that malnutrition is a symptom of a dysfunctioning society. Malnutrition is almost synonymous with mal-distribution of resources, which makes it possible to "have the poor always with us". In his article, G.M. Sammy pointed out the great disparity in incomes between the lower and higher income groups in the Caribbean.

Food and Nutrition Policy must cease to be regarded as a mere welfare programme and must be implemented at the development planning level in the government. Our governments and people need to realize that development is not just an increase in industrialization or gross national product, or a positive trade balance. The ultimate goal of development is to enhance the quality of life, including improved physical and mental well-being.

Many governments in the Caribbean area recognize the right to a free education and have taken steps in that direction; but few have, to my knowledge, included in their development policy a statement of a much more basic

human right: the right to a regular supply of adequate food.

However, the fact that many governments in the area now realize the importance of developing agriculture indicates that food and nutrition policy is beginning to be considered at the planning level. I sincerely hope that as we reduce our dependence on foods from other countries, it will mean that more of our resources will be funnelled towards our poor farmers and other low-income groups.

In conclusion then, I believe that we need specific nutrition programmes but these are likely to be only palliatives if they are not combined with a policy which reduces deprivation and improves the quality of life of the poor.

Sincerely

June A. Gibbons

P.S. I am a Barbadian student working on my masters' degree in International Nutrition at Cornell University.

## NUTRITION MADE SIMPLE

### *FISH\**

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

Fish has been eaten in most parts of the world from time immemorial. In fact, more than fifty different types of fish are mentioned in texts dating from before 2300 B.C. In Egypt in 2200 B.C., fish from the Nile River led to the development of a thriving trade in dried and salted fish. Since that time, every civilization - Greek, Roman, Chinese - has had favourite ways of preparing and eating fish. However, in most Western countries, fish seems to have a lower status than beef, or meat in general, and thus is rarely served as the main dish at ceremonial dinners. In a few communities in the world, fish is not eaten at all.

When it is eaten, as might be expected, its importance in the nutritional diet varies. For example, in Japan and some other islands, fish supplies nearly twenty per cent of all the protein eaten. As far as the kinds of fish prepared, the method of preparation and how much of the fish is eaten, there are large differences depending on the various populations concerned. Thus, while shark, fish's bladder and fermented fish sauce are delicacies in some cultures, other people may view these dishes with alarm.

The tendency of fish to spoil rapidly was early recognized, thus methods of preservation such as sun-drying, salting and smoking are very old techniques. In fact, salting catches at sea was practised five hundred years ago. Modern fishing vessels carry tons of ice to keep the fish from spoiling on the long voyage home. In addition, the fish are sprayed with an antibiotic, acromycin, to prevent the bacteria on the skin from causing deterioration.

Nutritionally, fish is often under-appreciated. In the uncooked state, different species vary in protein content from about ten to twenty per cent; when dried, the protein content doubles or quadruples. Actually,

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*\*Reprinted from the Los Angeles Times Home Magazine, 2 March 1975.*

fish protein has a high biological value, since it contains all of the essential amino acids in the right proportions and is easily and rapidly digested. Because of its soft flesh, it is easy to chew and useful in diets for invalids and the elderly.

The fat content of fish varies greatly between different species, and seasonally as well. Fish fall into three categories as far as their fat content is concerned - fat, intermediate and lean. The fat species, which includes salmon and sardines, has about eight to fifteen per cent fat; the intermediate group, bonito or mullet has about two to seven per cent, and the lean, such as cod, haddock, halibut, barracuda, flying fish, sea bass and shark, only about one to two per cent. Fish roe, however, is very rich in fat; caviar contains about twenty per cent.<sup>1</sup>

Fish fats are extremely unsaturated, which makes them vulnerable to oxidation and spoilage. This high degree of unsaturation makes fish a valuable component of diets used to treat patients who have had heart attacks and who have too much cholesterol in the blood (hypercholesterolemia). The low fat content of lean fish makes them desirable in low-calorie reducing diets.

In some societies, small fish may be an important source of calcium and fluoride when the bones are also eaten. The liver oil of some species of fish, notably the cod, the halibut and the shark, are rich sources of vitamins A and D and have been used widely as supplements to diets low in these nutrients.

On the other hand, fish can cause some problems for some people. Some susceptible persons may be allergic to various fish proteins. Many types of fish poisoning are seen occasionally in different parts of the world. Some of these are due to fish which may be poisonous at certain seasons or times of the year, as in the case of barracuda.

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<sup>1</sup>The fat content of many fish obtained locally can be found in the "Food Composition Tables for Use in the English-speaking Caribbean".



In industrialized countries, the ingestion of fish may be dangerous if the fishing grounds are contaminated with industrial wastes. Perhaps the worst large-scale example of such toxicity occurred in Japan, where many people developed Minamata disease from eating fish containing high levels of mercury compounds. In regions where it is customary to eat raw fish, it is possible to develop a tapeworm or human fluke infections. In parts of Southeast Asia, certain types of raw fish contain an enzyme, thiaminase, which can destroy thiamin (vitamin B1).

Modern technology has both harmed and helped man's ability to feed himself on fish. Newer methods of freezing, drying and canning obviously extend supplies to many who otherwise would never even see fish. Also, mariculture and aquaculture are now enabling seafood to be reared in watery "farms".

On the negative side, modern methods of "fish slaughter," using spotter planes and radar, are badly hurting the ocean's potential. Although the sea has provided an abundant supply of food and is euphorically considered to be an "inexhaustible resource," this is not so. Control of overfishing and



*From a 16th Century Flemish print attributed to Breughel*

pollution by international agreement is a major need to protect the world's food supplies of the future.

CAJANAQUOTE

*"It was interesting to observe dietary habits of the inhabitants of the area. They pick seeds of a type of grass, grind them, make a paste of them with water, and burn it. They eat this with a greasy substance extracted from the fluid of the mammary glands of female animals that they keep confined in large paddocks or sheds. With this they combine slices from the bellies of split-hoofed animals that feed on grain and garbage with the ovarian secretions of large birds, both of which are heated on a griddle over a fire. With these substances they break their fast after the night's repose, and they call these items buttered toast, bacon, and eggs."*

A. Non Ymous

*Quoted in Rutgers University  
Veterinary Extension Topics, June 1972*

## FROM THE EDITOR

### ACCEPTANCE AT LAST?

*One of the interesting features of development in the Caribbean during the last two years has been the new-found orientation towards the problems of food and nutrition. Whether this was an inevitable and logical part of the development process, or a line of thought forced upon governments and people by the money and food crisis that began in 1973, may never be known with certainty. The important fact is that "nutrition" has become part of the vocabulary of economic and development planners, and some of the discipline of economics has been finding its way into the thought processes of nutritionists.*

*This is all very wholesome. Realisation of the interdependence between nutrition and the various development sectors, and of their ultimate link with economic and political realities must surely be the axis on which this new thinking revolves.*

*Where there exists political commitment to nutritional improvement, whatever the premises from which it is derived, this should be reinforced by firm data and nutritional information of high quality. Where such commitment is lacking, it is these same tools which must be used to generate it.*

*Could it be that we have for too long rested the case for nutrition on the emotion-laden pictures of the starving infants of the world? Or have years of amateurism in food and nutrition nurtured the complacency which we are at last beginning to shake off?*

*Nutrition stands in the doorway of the national planner's world. It must now go forward.*

THE EDITOR

## TOPICS AND COMMENTS

*BREAST-FEEDING LINK TO NUTRITION AND BIRTH CONTROL TO BE  
INVESTIGATED BY NEW LACTATION CENTER  
Press Release from The Human Lactation Center Ltd.\**

The Human Lactation Center Ltd. has been organized recently to coordinate worldwide efforts to distribute information and research the effects of breast-feeding on health and population.

The Center is located in the East at Westport, Conn. under the direction of Dr. Dana Raphael, anthropologist and author of a leading book on the social impact of breast-feeding. It is co-sponsored at UCLA, and work there will be under Derrick Jelliffe, MD, Head of the School of Public Health and Patrice Jelliffe, RN, MPH., authors of many publications on breast-feeding and infant growth, disease and malnutrition.

"Strangely enough--although more than one billion women are involved with breast-feeding every day of their adult lives--" Dr. Raphael said, "up until now, there has been no place devoted entirely to this critical human function."

"It's high time too. We have much to do. The alarming rise of infant death all over the world related to alternative feeding practices has caused many World Health agencies and 'third world' governments to call for ways to stem the tide away from breast-feeding. The Center will promote breast milk as a 'natural food resource' particularly in places where improper use of milk substitutes have added to malnutrition and infant death," Dr. Raphael said.

The planning director also extols the advantages of breast-feeding for population control. "People should know that it has been the oldest and one of the most effective methods of inhibiting fertility throughout

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\*The Human Lactation Center Ltd., 666 Sturges Highway, Westport, Connecticut 06880, U. S. A.

the centuries. If practiced fully, and I mean without schedule and supplementary foods, it can be as much as 70% effective as a form of contraception."

The Center's first year objectives also include work with decision makers in government and industry to develop legislation and lifestyles which support the working/breast-feeding mother. Medical personnel and food industry leaders will be asked to confer on ways to develop safe weanling foods.

The Center's research staff will also seek to document the psychosocial benefits of breast-feeding, to investigate the causes and cures for pathological conditions in the human breast, to create a library to house the data on lactation, and to publish a journal entitled The Lactation Quarterly.

CAJANAQUOTE

*"In less developed countries, the best form of promoting baby food formulas may well be the clinics which the company sponsors at which nurses and doctors in its employ offer child-care guidance service. One fruitful by-product of this operation is that at christenings and at birthday parties...\* products often are given as presents."*

*Quoted in "Business Abroad"  
June 1970, p. 33.*

\*name of company.

*WINE - A Nutritional Perspective\***By Roslyn B. Alfin-Slater and Derrick B. Jelliffe*

The appreciation of wine goes far back into man's history, to ancient Egypt and Imperial Rome. Mysteries, traditions and controversies surround its use. It has been said that civilization began with agriculture, when nomad man had to wait for planted seeds to grow mature, and that the next stage in development of the nonwandering life was the cultivation of grapes, which need several years to reach maturity.

It is thought that wine was first produced somewhere in the Caucasia region and spread around the Mediterranean basin. It is, however, often not appreciated that the vine is also native to the United States - in fact the Viking explorer Leif Erickson found it here and used the name of "Vineland" for this country.

The spread of Spanish missions throughout California introduced viniculture on the West Coast, and in recent decades the California wine industry has modernized its production - blending new technical procedures, such as mechanical grape harvesting and the use of laboratory cultures of yeast, with long-established traditional practices.

Over the centuries and in all cultures, wine has figured in many ceremonies and rituals. In some societies, wine is felt to be a gift of the gods; in others it was used as a libation - that is, as a poured offering to propitiate the gods and insure success. Some attributes of wine may be based on "sympathetic magic", for instance, red wine - similar in appearance to blood - is thought to give strength and is used to treat one who has had severe bleeding.

From a nutritional point of view, wine is basically composed of alcohol (ethanol) ranging from 8 to 13 percent, and varying amounts of unfermented grape sugar depending on whether the wine is sweet or dry.

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\*Reproduced from *Los Angeles Times Home magazine*, April 27, 1975.

So-called "fortified" wines, such as sherry, have additional alcohol added so that the alcohol content is about 20 percent. Very small quantities of other nutrients are present, including riboflavin (vitamin B<sub>2</sub>), nicotinic acid (niacin) and thiamin (vitamin B<sub>1</sub>). Iron content of wine varies considerably and, especially in cheap wine, it may be quite high.

The essence of different wines is, of course, a blend of different colorants, esters, formaldehydes, odorants and acids such as citric, malic and tartaric. It is really a variation of more than 100 ingredients that makes for differences in the aroma and flavor of different vintage years.

Calorifically, wines usually contain about 70 to 100 calories in 100 milliliters (3½ ounces), and an average bottle of wine (4/5 of a quart) contains 560 to 800 calories.

In some European winemaking countries *vin ordinaire* is often consumed instead of water, with a resulting intake of two quarts or more each day. Under these circumstances, there exists a high incidence of obesity, cirrhosis of the liver and, because of the high iron content of red wine, siderosis (iron retention disease). On the other hand, many medicinal properties have been attributed to wine. For example, in Germany a wine called *Niersteiner* is supposed to protect its drinkers from kidney stones.

And witness the supposed effect of "tonic" wines and various restorative" wines used unwittingly by otherwise teetotalers.

Wine buffs abound, giving the subject a mysterious but rather innocent complexity. However, the taste-partnership of appropriate wine and food is a very real pleasure. As a result, wine production is on the increase, with an estimated 44 winegrowing countries producing nearly 8 billion gallons of wine per year. American wines are finding international acclaim and distinction, which represent the great strides made by the California winemakers in this most ancient product and aid to enjoyable living.

*THE AVOCADO: A NUTRITIOUS CONVENIENCE FOOD FOR NEARLY 9,000 YEARS\**  
By Roslyn B. Alfin-Slater and Derrick B. Jelliffe

As early as 700 BC, the avocado was being used in Central America as food for humans, yet this nutritious fruit has only become popular in European gourmet markets in the last decade. In the West Indies, the avocado has changed its status in the last 100 years - previously it was considered a poor man's food.

In the early 1920s, more than 100 different kinds of avocados were grown and sold in the United States. Today, at least in the California markets, almost all are either of the Fuerte or the Hass varieties. These are differentiated by the fact that the Fuerte has a dark purplish, rough skin (hence the name "alligator pear" in some regions), while the skin of the Hass is green and smooth. Growers have selected trees that produce fruit of relatively small size and have a longer season of availability to the consumer.

The avocado is a unique fruit. Its meat is green-yellow, buttery and soft without a bit of "crunch". It looks like a pear but tastes more like a nut; it grows on a tree and yet is used like a vegetable. Like the banana, it is high in potassium and low in sodium so it can be eaten by those observing low-sodium diets.

Avocados are a concentrated source of energy because of their high fat content (8 to 23 percent), which contributes considerably to their flavour, consistency and "mouth-feel". Fortunately, more than 80 percent of the fat in the avocado is unsaturated.

Fat-soluble vitamins A and E are also present in the avocado. Vitamin A, in the form of beta-carotene, is found in appreciable amounts, and actually may supply approximately 10 percent of the recommended

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\*Reproduced from *Los Angeles Times Home magazine*, March 3, 1974.



dietary allowance. Half of an average-sized avocado has 2.85 ounces of edible portion and contains more than 10 percent of the recommended daily requirement of vitamin E.

While one does not ordinarily think of vegetables and fruits as a source of dietary protein, the avocado contains 2 to 3 percent protein. This value is higher than that contained in other fresh fruits and is in the same range as that found in many vegetables.

The avocado also contains significant amounts of phosphorus, magnesium and vitamins of the B complex. For people who are placed on low-calcium diets (kidney-stone formers), the avocado is a good food, since it is lower in calcium than any other vegetable except sweet corn and raw mushrooms. Avocados provide a fair source of usable iron; the content is equal to that found in most fresh fruits and vegetables.

The relatively high fat content of the avocado, the species and the conditions under which it is grown - as well as the way it is used in ordinary diets - makes its classification as a fruit rather incongruous. Avocados are not usually used as dessert items or as snack foods. Rather they are used in the same way as are soft cheeses, eggs, olives, peanut butter - in salads, as sandwich fillings and as dips. Comparison of the fat content of avocados with these food items puts the avocado at a definite advantage.

Importantly, the avocado is eaten uncooked, with no opportunity for the destruction of nutrients during cooking. In fact, the avocado is a "natural convenience food" and can be eaten without preparation.

FOLK  
LORE  
and  
FOOD  
HABITS



by

*Sadie Campbell\**

In Jamaica, food habits still reflect our African heritage very strongly although some aspects have been partially masked by European and North American influences, especially in urban areas. Escoveitched fish, jerk pork, run-down, dip-and-fall-back, mannish water, fla-fla and spoon-tan-up, all dishes of African origin, are familiar menu items particularly on festive occasions in the rural areas.

Ground provisions, better known as starchy fruits, roots and tubers, which include yam, cassava, green bananas and plantains, feature prominently in the diet. Cereals such as rice, cornmeal, wheat flour (dumplings and bread) form part of the staple foods. Supplies of fresh meat, fish, eggs and milk are used where funds permit. Salted and pickled fish and

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*\*Reproduced by permission of the author and The Jamaica Journal.*

*Mrs. Campbell is the Principal Scientific Officer (Food and Nutrition) at the Scientific Research Council of Jamaica.*

dried peas remain good "stand-by" protein foods. Canned, frozen and other convenience foods are becoming more widely used and cottage-style, new sugar and sugar head have given way to factory-processed sugar.

Increased economic prosperity has resulted in changes in methods of cooking, and here the African influence has been lost to a great extent. However, the open wood fire and coal pot are still used in the less affluent households. Likewise the three legged iron pot and round-bottomed iron 'dutch' pot have given way to aluminium or enamelled sauce-pans and the wooden turn-stick has been replaced by long handled metal spoons.

Three main meals are usually eaten each day and preparation methods are chiefly boiling, frying and roasting on a hearth with a slow but increasing trend towards baking and grilling depending on the cooking facilities available.

The male head of the household is the most favoured member of the family and receives the bulk of the "meat-kind" at meal times. The toddler who is at greatest risk, may have to be satisfied with monotonous meals of porridge day after day with little supplementation other than an occasional piece of fruit, or cracker. Poor economic circumstances may be partially responsible for the predicament of the pre-school child but the influence of the grandmother, folklore, and failure to appreciate the need for proper food are important factors.

Marriage is not the norm and many children are born out of wedlock and of necessity reared by females, sometimes five generations in depth in a single household. Some mothers have migrated or have sought employment in search of better economic standards and left their children in the care of older siblings, the neighbour or grandmothers. The elders in the society are well respected for their help and advice in child rearing. At times, however, through their influence, the 'nana', 'balmyard operator', or 'obeah man' or 'woman' is consulted on health matters, with deleterious results.

This category of lay leader is supposed to cast a 'spell' on the offending spirit (ghost) and thus rid the sick of his infirmity.

Tradition forbids the feeding of a wide range of foods to small children, although any one person may only be familiar with one or two of these taboos. Certain foods are also taboo in pregnancy and lactation. Other foods are "super" foods such as Irish moss and linseed for virility, and bush teas are still used to cure a variety of ills. The accompanying list with comments attests to this.

#### FOOD FADS AND SUPERSTITIONS

*Fad or Superstition:* - *Half an egg causes a child to grow to be a thief.*

*Comments:* - The child needs any part or the whole egg for good growth. If you cannot afford to give each child a whole egg then certainly give the half.

*Fad or Superstition:* - *Babies must not eat anything with feathers or they will be very talkative.*

*Comments:* - Good idea for the child to learn to talk and express himself - feathered creatures supply good quality protein for the mental, and physical growth of the child.

*Fad or Superstition:* - *If babies drink goat's milk, they will grow with a big forehead.*

*Comments:* - Goat's milk contains more fat than human or cow's milk. This fat is naturally homogenized i.e. will not settle out to become cream when the milk is pasteurized. It contains energy and protein for growth of the entire body.

*Fad or Superstition:* - *Condensed milk gives babies worms.*

*Comments:* - Sweetened condensed milk contains 60% sugar. Because of this sweetness there is a tendency to use too little - hence the child is deprived of food for growth. Relationship to worms is unfounded. Usually worms abound where there is poor sanitation and children play around in the ground with too much of their bodies exposed.

*Fad or Superstition:* - *Liver makes the baby's tongue heavy.*

*Comments:* - Liver is a particularly good source of protein, iron and Vitamin A, all necessary for good growth and the maintenance of healthy tissues. There is no proof that deposits of nutrients from liver are any greater in one part of the body than in the other.

*Fad or Superstition:* - *Peas soup gives babies sour stomach.*

*Comments:* - Well cooked peas, rubbed through a strainer which frees it of the extra fibre or roughage, is easily digested. Give the young child the soft portion which comes out on the back of the strainer.

*Fad or Superstition:* - *Feeding chicken to a child before he is talking prevents him from talking.*

*Comments:* - Chicken is a good source of protein which the child needs to grow. There is no known effect on speech.

*Fad or Superstition:* - *Children are not to drink from a bottle or they will become drunkards.*

*Comments:* - There is a danger of getting gastroenteritis from improperly cleaned bottles and teats. It is difficult to police sanitation of bottles where overall hygiene is poor. Feed the child from a cup with a spoon.

*Fad or Superstition:* - *Babies who eat the same foods as adults will get big bellies.*

*Comments:* - Most adults have a well-rounded diet. The same is not true of the small child who usually does not get enough calories and protein at each meal. He has to subsist mostly on liquids which are not adequate for good growth. A protruding abdomen (big belly) could be a sign of malnutrition.

*Fad or Superstition:* - *Eggs will make babies cluck like hens.*

*Comments:* - The young child has a language of its own and the healthier and more well fed he is, the more alert he will be to his surroundings hence more "babbling" pleasant sounds instead of crying. Eggs are good sources of protein, minerals and vitamins which the child needs for general well-being.

*Fad or Superstition:* - *Rice gives babies worms.*

*Comments:* - No known relationship between rice and worms. Rice is a high energy food which contains a fair amount of protein. Give to the baby with peas, beans, cheese, milk, meat or fish for full utilisation by the body.

*Fad or Superstition:* - *Ground provisions retard babies' speech.*

*Comments:* - Ground provisions include yams, cocos, potatoes, breadfruit and banana and are more appropriately termed starchy fruits, roots and tubers. These foods contain mainly starch. When served without protein-rich foods, the young child will not grow as well.

*Fad or Superstition:* - *Young babies under 18 months should not get any food after 12 noon.*

*Comments:* - As early as 5-6 months the baby needs foods other than milk. These include fruit juices, porridge, puréed fruit, vegetables, meats, fish, starchy foods e.g. rice, yam, potato - a variety to ensure that it gets all the nutrients it needs for proper development. These are given in small feeds usually at mid-morning and mid-afternoon at the start. From 9 months or so when the child should be eating from the 'family pot' it should get three basic meals to fit in with the family's pattern of eating. Afternoon and evening meals are therefore essential.

*Fad or Superstition:* - *Cow's milk is too heavy for a one year old child.*

*Comments:* - It is presumed that "heavy" refers to the size of the curd and the amount of fat in the milk. It is perfectly normal to give the young child fresh milk that has been appropriately sterilised.

*Fad or Superstition:* - *Cornmeal porridge turns back the teething water into the infant's stomach and this causes diarrhoea.*

*Comments:* - There is no such relationship. Usually diarrhoea is caused through unhygienic handling of baby's utensils and surroundings, not enough solids and too much sugar in the porridge. Cornmeal is an economical cereal for baby. Cook it in milk to make a thick porridge. Feed the baby with a spoon.

*Fad or Superstition:* - *Nightingale soup makes a baby talk quickly.*

*Comments:* - The child passes through various stages of development. He will only talk when he is ready. Parents can help by talking to the child and feeding him properly so he will develop normally. Do not wait on nightingale soup - there are not many of those birds around.

*Fad or Superstition:* - *Milk makes the baby light of colour.*

*Comments:* - There is no proven relationship between the two. Milk is an important food for the young child's development.

*Fad or Superstition:* - *Milk, eggs, tomatoes and green vegetables should not be eaten by the pregnant woman or they will make the baby too big.*

*Comments:* - These are just some of the many foods she needs for her own well-being as well as that of the baby.



*Fad or Superstition:* - *Cabbage and liver will give the unborn baby birth marks or liver spots.*

*Comments:* - Abnormal colouration of certain portions of skin are termed 'liver spots' or 'birth marks'. There is no relationship to what the mother eats during pregnancy.

*Fad or Superstition:* - *After meat is cooked in soup nothing is left in it.*

*Comments:* - Meat contains flavouring substances, protein, fat, minerals and vitamins. Some of the minerals, vitamins and flavouring substances are soluble in water and will leak out during cooking. Some of the fat will also melt and mix with the drippings. Meat protein, however which is the actual muscle fibre, is still intact after cooking. The statement is therefore false. One needs to eat the meat as well as the other components of the soup to get full benefit.

N.B. Flavouring substances are *not* nutrients.

*Fad or Superstition:* - *Unboiled milk makes you fat.*

*Comments:* - Milk is heated (sterilized, pasteurized, boiled, scalded) to free it from organisms which might cause ill health. Milk bought in the stores is already pasteurized. The milk we get from our own animals or from the neighbour should be scalded for the reason stated above. The butter-fat of milk is a high energy food.

*Fad or Superstition:* - *Ripe banana in combination with butter is poisonous.*

*Comments:* - Ripe bananas supply energy. They contain sugar as a result of the conversion of the starch in the green fruit. Butter contains fat, water and Vitamin A; all necessary food nutrients. No known case of poisoning from eating both at the same time.

*Fad or Superstition:* - *Toast is less fattening than bread.*

*Comments:* - In toast, water is removed and some of the starch is changed to dextrin a simpler more digestible form of starch; the true energy value is unaltered hence the statement is false.

*Fad or Superstition:* - *The eating of too much rice will cause one to be light of weight.*

*Comments:* - Rice is a starchy food supplying energy. There is a modest amount of protein and in the case of brown rice some of the B vitamins. Rice and peas in the ratio of 2 or 3:1 makes a good quality dish especially when enhanced by some animal protein e.g. corned pork. Too much rice is likely to cause over-weight if the supply of energy is greater than the output.

*Fad or Superstition:* - *S.M.P. (Skimmed Milk Powder) gives one diarrhoea.*

*Comments:* - In some cases, people are intolerant to the high lactose (milk sugar) present. Others may be affected because of the absence of fat, the use of contaminated water in mixing or mixing too concentrated. The majority are not affected. S.M.P. is a good source of protein, riboflavin (B<sub>2</sub>) and calcium.

*Fad or Superstition:* - *If you have an ulcer (e.g. on the foot) do not eat rice, fish, ripe banana, ackee or avocado pear as they will give bad blood and cause the sore to worsen.*

*Comments:* - For ulcers to heal readily - body building foods and minerals and vitamins are all important. "Bad blood" is often so termed because of lack of iron - good sources of which are molasses, liver, kidney, heart and green leafy vegetables.

*Fad or Superstition:* - *Cocoa and chocolate rot bones.*

*Comments:* - The concept probably stems from the fact that cocoa and chocolate contain oxalic acid which combines with calcium to form insoluble calcium oxalate thereby making the calcium unavailable to the body. It is strongly recommended that cocoa and chocolate be not given to children more than once daily.

*Fad or Superstition:* - *Crayfish makes you foolish.*

*Comments:* - Crayfish is a good source of protein for growth and development.

*Fad or Superstition:* - *Fish heads give brain.*

*Comments:* - Fish heads contain 45-50% waste as bone. The flesh on the head has the same composition as any other part of the fish. Fish is a high protein food which is necessary for growth of tissues in all parts of the body including the brain. Any other protein-rich food from animals e.g. meat, poultry, cheese, egg, milk, will function similarly.

*Fad or Superstition:* - *Cold food makes you drowsy.*

*Comments:* - If food is improperly stored and not re-heated well, toxins built up by micro-organisms may abound and cause discomfort to the eater.

*Fad or Superstition:* - *Bush tea warms the stomach and takes the rawness off the chest.*

*Comments:* - The stomach is securely tucked away and is always warm. One does not need bush tea to do this. Give the child a well rounded breakfast - not a 'belly-full' of water.

Food faddism is innate in our culture, and has been complexed by the mixture of ethnic groups which make up our society. Science and other advances in economic development have also come in for their share of the blame. How often we hear that fruits and vegetables which have been fertilized are only big and 'so-so'; they have no taste and the real food value is not there. There is profound reliance on health foods, tonics, and advertised proprietary foods.

Chocho (Chayote, Christophene), particularly the white variety is alleged to relieve high blood pressure. There is no scientific foundation for this. What we do know, is that chocho contains 90-94% moisture and minute amounts of calcium and phosphorous for bone and teeth building, but

nothing of the order of magnitude as that of milk, cheese, dark green leafy vegetables and dried beans.

Herb treatments are popular and anything bitter 'purges' the blood. The foundations of this thought are uncertain but may have stemmed from days when quinine was the chief form of medicine. Medical circles suggest bitter substances induce the flow of gastric juice and perhaps the appetite is increased. The story of bush teas and their ability to 'cure all' is well known. From a nutritional standpoint only the sugar used for sweetening and the calcium from the spring or river water provides any food value. (Note that where there is great dependence on rain water from tanks as is often true in some parts of Manchester and St. Elizabeth there is a high incidence of dental caries).

It is common practice to give the child a 'wash-out' during the major holidays from school, after a severe cold or even every week-end. Feeding during this period is limited to thin soups and/or porridge and bush teas, so that the purgative can 'act'. This is an injurious practice, because nourishing foods are withheld and the little present is 'heralded off' before it can be absorbed.

While on the topic of herb treatments, there is the matter of home-made tonics, from the barks and roots of trees. The title of the "brews" noted below, which were entered in the 1972 Culinary Arts Competitions staged by the Social Development Commission, suggests the intended purpose for these and other concoctions.

## 1. KEEP ME FIT

1 oz. sarsaparilla	3 whole cloves
1 oz. dried strong back (leaves, stems, roots)	5 quarts water
¼ lb. bryal (or wild yam)	1 cinnamon stick
2 pcs. 6" bits green withes	1 tsp. nutmeg
4 hands young bananas	1 tbsp. angostura bitters
1 doz. dried pimento seeds	1 pint proof rum
	1 can sweetened condensed milk

## METHOD:

Wash first five ingredients. Put in large saucepan, add water to cover, add pimento, cloves, cinnamon and boil until about 1½ quarts of liquid are left. Drain off and allow to cool. Add nutmeg, bitters and rum. Sweeten with condensed milk when ready for use. (N.B. Do not sweeten and store as it will deteriorate).

## 2. TALLAWAH TONIC DRINK

1 lb. sarsaparilla	1 handful strong back
1 handful coconut root	6 quarts water
4 pcs. chew stick	1½ lb. dark sugar
6 pcs. bryal root	¼ quart rum
1 handful nerve withes	1 nutmeg
½ oz. gumarrow bit	¼ quart brandy
1 young coconut	

## METHOD:

Wash the first eight ingredients; cut up finely and put to boil. When water is down to about three quarts, remove from fire, cool and sweeten. Add rum, brandy and grated nutmeg. Bottle and cork tightly. Put in the sun for a day or two. Use as desired.

While the preparations may have medicinal value, the food value is limited to the energy value of the alcohol and sweetener.

Immature bananas are esteemed because of the belief that they are rich in iron. This concept probably stems from their becoming discoloured when cut with a low grade steel knife or when cooked in an iron or chipped enamel pot.

The discolouration is due to the oxidation of the tannin (or stain), a reaction catalyzed by the iron in the cutting implement or cooking utensil. The actual amount of iron in the immature banana is so small (1 mg per  $\frac{1}{4}$  pound) that the adult would of necessity have to eat 4-6 lbs./day to supply his iron needs, that is, if he were solely dependent on green bananas for his supply of iron.

Fresh carrot and beet juices as well as other so-called 'natural foods' are often craved. By the traditional method of preparation, that is, grating the peeled vegetable and making a water extract, the bulk of the nutrients (carotene) is discarded in the "trash".

Nutrition education is needed here, either to teach people to modify the method of preparation by cooking the vegetables and sieving or blending to use the whole vegetable, or using the "trash" in soups, meat or fish balls or loaves, patty-filling and puddings.

Superstitions and folklore are responsible for a great deal of the foregoing, and there are yet other customs which stem from folklore which are injurious to the health and well-being of the pregnant and lactating woman and the young child in particular.

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*The collection of "Fads and Superstitions" was a joint effort by the U.W.I. School of Nursing Junior Students (April 1968) and the Jamaica School of Agriculture Students in Consumer Education (Associate Degree) Course (1971).*

MARKETING CONSTRAINTS TO AGRICULTURAL  
RATIONALISATION IN THE CARIBBEAN

by

C.E. McIntosh\*

*THE PROBLEM AND APPROACH*

This paper attempts to (a) identify constraints originating in the marketing of agricultural products, which militate against the achievement of a rationalised agricultural sector in the Caribbean Area, and (b) offer some suggestions for removing these constraints. It is impossible in a short paper as this to deal with, extensively and in depth, all the constraints. Those dealt with are deemed by the author to be crucial to any progress toward agricultural rationalisation in the Region.

The approach of this paper is to set up a conceptual framework within which the problem is analysed, and highlight the potential for rationalisation; then to describe aspects of agricultural marketing which constitute constraints, and offer suggestions for removing these constraints.

*THE CONCEPTUAL FRAMEWORK*

*Agricultural Marketing*

The concept of marketing embraces all those activities involved in ensuring that products are distributed from their point of initial production to final consumers in the quality (form), quantity, time and price

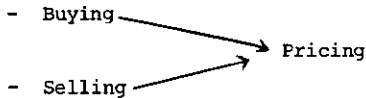
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desired by the consumers, and the system of communication and pricing which guides these activities. These activities could be classified as:

A. *Exchange Functions*



B. *Functions of Physical Supply*

- Assembly and Transportation
- Storage
- Processing

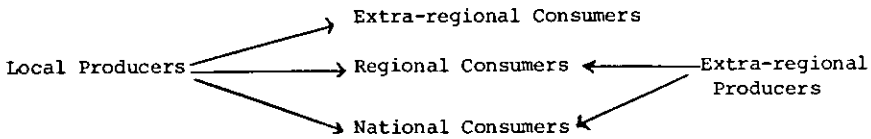
C. *Facilitating Functions*

- Finance and Risk Acceptance
- Information and News
- Grading
- Packaging
- Demand Creation
- Research and Development
- Supervision

These activities are basic to any marketing system though they receive varying degrees of emphasis. Where government has intervened into the private enterprise system, the concept of marketing must be expanded to deal with government policy and service programmes. The need for further expansion of the concept when more than one government is involved, as is the case in the Caribbean, is obvious.

Of equal significance in the concept of marketing is a consideration of the procurement and distribution of agricultural inputs - lands, labour and capital, including seeds, feeds, fertilizer and chemicals. Emphasis in this paper will however be placed on the agricultural production-consumer sequence of this interrelated marketing system.

The channels of distribution of agricultural products in the Region are typified as follows:



Past developments fostered strong links between producers in the Region and extra-regional consumers. Concomitant with the weaknesses was the development of strong links between extra-regional producers and regional consumers, thus creating a strong extra-regional dependence on food supplies.

*Marketing Constraints*

Marketing constraints to rationalisation include those aspects of marketing which are antagonistic or in conflict with the achievement of a rationalised agricultural sector - one from which the maximum gains are derived. These constraints are to be found in the present arrangements for performing the marketing functions, and the service programmes and instruments agreed upon by participating territories.

*Agricultural Rationalisation*

The concept of rationalisation of agriculture with respect to the Caribbean Region has been frequently used since the mid-sixties. However, the term is without precise definition and means different things to different people. Rationalisation is conceived here as a goal or objective which, if achieved, will result in economic gains in excess of losses to all participants. It is not an instrument to be manipulated nor a programme (which is non-existent).

Goals or objectives arise from value judgments or beliefs held by members in the society. Values are not necessarily common to all members nor weighed equally by the members. Progress towards achieving a selected

goal or objective is constrained by the degree of importance attached to that goal by the participants. The goal of rationalisation is constrained by the dispersed nature of the regional units, their different political desires and their differing emphasis on regional cooperation. The task to achieve rationalisation involves detailing the present situation, specifying particular targets, and selecting instruments or programmes to achieve these targets.

*THE CARIBBEAN SITUATION: RATIONALISATION POTENTIAL*

The territories which make up the proposed CARICOM Area are dispersed over a thousand-mile radius. As such these territories span a wide range of latitude and longitude; and although they fall generally within the tropical zone, differences in topography, altitude, size, soil and rainfall characteristics endow the area with differing regional production potentials with obvious inter-regional trade implications. These have, however, not developed since the economies of these territories were and still remain extensions of the British economy. The result was that the marketing of agricultural products at the national, regional and international levels has been influenced by British agricultural and trade policies. The essential goal of these policies was to maintain sources of raw materials for the development of British agro-based industries and markets for finished products and other agricultural products originating in the United Kingdom or other colonies.

Today, the marketing sectors which are regarded as well-developed and well-organised are those involving the major export crops - sugar, bananas, citrus, cocoa, coffee and so on. These arrangements are not necessarily the most favourable nor efficient from the viewpoint of the exporting countries since the gains from the processing, shipping and merchandising accrue to metropolitan interests.

The potential for inter-regional trade is, however, highlighted by the established production patterns and varying emphasis on agricultural enterprises. Thus cocoa and nutmegs are important in Grenada, rice and

livestock in Guyana, bananas in Jamaica and the Windward Islands, fish and shrimps on the Guyana Continental Shelf at close proximity to Trinidad; sugar in Jamaica, Belize, Barbados, Trinidad, Guyana and St. Kitts; citrus in Dominica, Jamaica, Belize and Trinidad, and so on. The dispersion of the staple production is supportive of trade relations between contiguous territories, e.g. sugar from Barbados to St. Vincent and St. Lucia, plantains and bananas from St. Lucia and St. Vincent; sugar from Trinidad to Grenada; bananas and spices from Grenada to Trinidad and so on. The potentials cannot be exploited without fundamental changes in marketing arrangements.

#### *CRUCIAL CONSTRAINTS AND SUGGESTED SOLUTIONS*

One obvious marketing constraint to rationalisation of the Caribbean agriculture is the lack of commitment on the part of territories to buy and sell products which are produced in the Region. Governments of individual territories through quarantine regulations and institutional trade restrictions (requiring permission to import regional produce) have provided the appropriate disincentive to the movement of produce from one country to another. This lack of commitment is evidenced by the limited number of products that were included in the Agricultural Marketing Protocol (AMP). The operation of the AMP with reliance on inefficient or non-existent marketing agencies is also indicative of this lack of commitment on rationalisation of agriculture. The Guaranteed Market Scheme (GMS) where no guarantee could be given nor policed could not be a solution. Indeed, these instruments are obstacles to rationalisation.

What is needed is the commitment to procure from and sell to regional markets all agricultural products of regional origin in a similar manner to the procurement and distribution of products at the national level through the traditional higgling system. This commitment is crucial to the allocation of resources on the basis of comparative advantage which is dynamic. Essentially, what is advocated here is a free play of market forces in determining production, location and marketing flows.

The pricing of certain agricultural products within the different countries constitutes another constraint to the progress towards rationalisation. Minimum guaranteed prices sometimes lead to a situation in which inefficient farmers in one territory are subsidised in the production of certain products vis-à-vis their more efficient counterparts in another territory. The solution to this problem may be (a) the abolition of minimum guaranteed prices, or (b) the application of these minimum guaranteed prices to all regional farmers. If, for example, tomatoes are shipped from Montserrat to St. Lucia, Montserrat tomatoes should receive as its minimum price per pound the minimum guaranteed price paid for St. Lucia tomatoes. Solution (a) is preferable since it would be more effective and manageable in the administrative sense.

Another aspect of pricing which is inimical to the achievement of the goal of rationalisation is price fixing for commodities such as occurs under the AMP. Price fixing of commodities at six-month intervals for crops of shorter gestation period and based on dubious or concocted cost of production figures is contrary to the principles of comparative advantage. An appropriate method for the pricing of commodities which does not violate the comparative advantage principle is that of formula pricing. Through price analysis and information dissemination, differences in average weekly price at various cities in the territories could be ascertained. These average prices could form the basis for setting up in the following week c.i.f. or f.o.b. prices with the appropriate deductions for shipping and other marketing charges. This system of pricing makes for flexibility and responsiveness in the directions of market flows.

Though the inland transportation, packaging and handling of agricultural products are generally poorly performed and need to be developed, a more crucial issue is shipping. Water transportation is still the cheapest means of moving products from one territory to another, but although the territories are separated by sea, efforts at establishing adequate inter-regional shipping lines have not been very successful. The problem lies in the kind of shipping which is given support by Caribbean governments and financial institutions. The types of vessels which should be emphasised are

the auxiliary schooners (40-45 tons). Encouragement should be given to these ship-owners through appropriate incentives to have these vessels equipped with modern facilities, including cooling, in their hold. These vessels should be assigned specific routes to provide regular (weekly) return trips between territories. Small steel vessels should be employed to connect territories such as Guyana, Trinidad, Barbados, Belize and Jamaica. Triangular routes could be devised in the shipping exercise.

The lack of storage facilities in the territories contributes another constraint to the production and distribution of agricultural products. Severe losses are experienced in produce intended for local consumption and even greater losses occur when regional distribution is attempted. Through proper storage management the losses could be minimised and inventories controlled to dampen price fluctuations, to ensure the farmers greater stability of prices and incomes. The answer to the storage problem is essentially the construction of appropriate storage facilities in all territories based on appropriate technology for the Region and the provision of trained personnel in storage management. Some research work will be necessary to estimate storage needs for a long period, but buildings could be designed in such a way as to provide for expansion without tremendous cost increases since compartmentalization is essential to good storage management.

The legacy of the colonial era where processing was done in the metropolis and the recent trend in the Caribbean of reconstituting imported processed products in the name of processing combine to present a formidable constraint to the efforts towards rationalisation. Fresh produce face strong competition from imported products; local entrepreneurs compete with multi-national corporations in procuring locally produced raw materials, and the surpluses from local agricultural production cannot be utilized in the processing plants since they are not designed for the purpose.

There should be a regional policy on the kind of processing which should be carried out throughout the Region to ensure that appropriate linkages with agricultural production is fostered. In this connection there should be a very high local agricultural product input into processed foods

before free access to regional markets is permitted. This could be fostered by the use of traditional export crops which enter the international markets essentially in the raw state, part of which return to the Region after significant processing is performed.

The agricultural marketing system in the Region is poorly financed. Credit facilities for marketing projects, until recently with the setting up of development banks, were almost non-existent. Even with these development institutions, collateral constraints on marketing projects limit the flow of funds to those projects. If marketing projects are to be properly financed, the lending philosophy of these institutions must be revised.

One final constraint which is crucial to achieving the goal of rationalisation is the lack of a common policy in the sale of certain agricultural products on export markets. Individual contractual arrangements often preclude the export of agricultural produce to regional markets. Also, different marketing agents use as part of their ammunition, higher and higher volumes of products from individual territories with the result that the producers become the casualties when prices fall. It must be noted that the marketing agents have little to lose since the marketing margins (especially the shipping costs) which constitute their earnings are reasonably constant.

There should be collaboration of exporting agencies in the Region to take a greater control in the marketing of produce. Combined bargaining on prices, agreement on quantities to be allocated from individual territories to certain markets, and controlling interest in shipping could result in improved regional income and release land now under export crops for other activities. Finally, contractual arrangements should specify the Caribbean Region as the domain of the local market.

## TAKING OFF THOSE EXTRA POUNDS\*

*by**Robert Bradfield*

Rare is the day that I fail to give at least one more person my interesting, informative and usually futile talk on how to lose weight. These sessions are brief and are not designed around any hard intellectual core of dietetic facts; but they do center on the central issue: helping people find strength within themselves. The grit needed to stay on any good weight loss programme. Forever.

Nearly every person with a weight problem knows about calories, proteins, fats, carbohydrates, bulk, vitamins. They know a lot about menu planning, making attractive low calorie meals which include all the good nutrients. They also know about appetite, and appetite suppressants, and about drinking vast amounts of water. Many know how to give themselves acidosis, and hope to thinly thrive on its disordered metabolism. Others have faith in injections of improved hormones, generally given by highly-advertised clinics.

Most of these people fail to keep their weight in balance, for they know about the quick nibble in the night, the sneaky snack, the taster's bite, the quiet culinary crumb; know how to hate yourself for the sake of a butter cream in a moment of absent-minded bliss or wavering weakness. The average victim of obesity has been through it all, has tried too often and succeeded too rarely.

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\*Reproduced from *The Science of Nutrition*, Vol. 4, No. 5 (1975).

*Dr. Bradfield is an Extension Nutritionist, University of California, Berkley.*



The need is not for a quick course in food values. But is it for a quick and easy psychotherapy that we yearn? Perhaps not. It is easy to find plump people who have emotional hangups. But the thin ones are not necessarily models of emotional adjustment either. Probably when good psychological studies are available, they will help us understand ourselves in this as in so many other problems. In the meantime, in the real world, as seen in the practice of medicine at Kaiser/Permanente Medical Centers, a detailed psychiatric approach does not appear to be the answer in most instances.

#### *The Problem*

Nearly every person I've ever met would like to lose weight, or gain weight or rearrange what they have. The greatest number--by far--want to lose weight to become "normal". Ironically, if "normal" means the average person, then in our society being overweight is quite normal. The problem then becomes that of trying to change the eating habits of our whole society. Naturally, you don't want that kind of philosophical smoke-screen: you want the doctor to tell you how to lose weight.

The problem is a complex one that varies amongst the vast numbers of people it affects. It is apparent that the severely overweight are quite another thing from the merely pleasingly plump. And the programme for each person must reflect the unique difficulties of his own personal struggle to lose weight.

#### *The Solution*

It is not in popular diets, or pep pills that lasting weight loss is found. It is in correcting inappropriate habits in eating that we come to grips with the obesity problem. As Dr. Hilde Bruch has pointed out in a recent book, "No human society...deals rationally with food". Food habits vary from group to group, and are largely learned in early childhood. The Japanese, eating rice with its high carbohydrate content, are thin because of their eating patterns. Many a plump Eskimo, despite a commendable

shortage of starches, continues to gain weight. Those who respond to boredom and frustration by eating, or ignore the feeling of being satiated, may never learn to adjust their eating to the demands of their body's physiology.

If you want to lose weight you must first focus on your primary goals and needs--no easy task. This will involve setting aside the superficialities of Dr. Atkins' diet or of the Adele Davis approach to food. Real, lasting success requires a complete commitment to the programme. Just how important to you is the goal of weight loss? How hard are you willing to struggle? And for how long?

Being overweight, as we all know, is the result of eating more food than the body requires. No matter how skimpy the meal, if it is more than you need, you will gain weight. If it's less, you lose weight. The arithmetic is as simple as that. No excuses! If you are overweight it is because your appetite and eating habits lead to excess food intake. These basic factors are forever active, night and day. To lose weight, you must eat less than you metabolise, and to keep it off you must eat less than you want. And you must persist in this forever. Unless you can accept this, you are in the position of the heavy drinker who cannot admit he is an alcoholic. And the failure will be complete and total.

Let us say, then, that you have thought it all out, you want to lose weight, you are willing to be hungry, and you know you can persist beyond the gratifying period of early weight loss; persist through the long years of sticking it out, trying to keep the weight off. How will you feel when a friend says, "Here, how about a piece of cheese cake? You don't have any weight problem". Or when your spouse remarks, "You wouldn't look so old if you didn't have those weight loss wrinkles". What now? How to begin? How to cut the food intake, lower the cholesterol, defeat diabetes and be voted Ms. or Mr. Kaiser Clinic of 1975?

### *The Plan*

First, there are those who will help you for a fee. And help they do. Weight Watchers gives a programme that is hard to beat. TOPS (Take Off Pounds Sensibly) is cheaper and just might be right for you. Really consider seeking outside aid--but not the commercialized help of the hormone shooting doctors and their newspaper ads. If you want to go it alone, there are many diets available. But no one I know ever counted calories and went by his pocket diet-guide for long. Hardly for years. Never for decades, and that is what we are planning, isn't it? Remember, you must select a diet that you can stay on permanently. All odd diets, like the Grapefruit Diet, or the High Protein Diet are obviously but temporary solutions to a permanent problem. Any delay in selecting a permanent plan is self-defeating.

The programme I favor excludes no foods entirely. No food is so bad you can't have some of it. And no food is so innocent you can have all you want. First off, you renounce all snacks. Entirely. Have tea or coffee plain. But no mid-morning goodies. No late afternoon nibbles. Then, at each meal, eat only *half* a normal serving of whatever is served. No special dishes for dieters. The whole family eats the same things; only you and I don't take a full serving--and *no* seconds. It all goes on the plate at once. And a lot of the plate has got to be visible when you start to eat. Get yourself some pretty chinaware. You will be seeing a lot of it, because the food won't be enough to cover it up.

If you are to succeed, cutting caloric intake is not sufficient. You must also seek to increase energy output. About age 25 your food needs start to diminish. If you are like the rest of us, by "middle age", your caloric requirement decreases about 10%. Having begun to diet--and having avoided Dr. Atkins, Adele Davis, and the other pie-in-the-sky prophets--the next step is to increase your energy output. And that means exercise.

I won't presume to mix up advice on exercise into my prescription for weight-loss. You must find your own mild exercise--preferably something that you enjoy and consequently will continue. Remember: if you could work

off just thirty-five calories a day, you would lose over three pounds a year. And that is better than you've done in the past, or you wouldn't have read this far.

Balance is the key to successful weight loss. Reducing food intake, increasing exercise and persisting in the programme forever--seems just too ideal, doesn't it? It is difficult, but there are successful *former* fatties. You can join them.

The beauty of this programme is that you do not buy expensive and delicious steaks. You avoid bankruptcy as well as obesity. Consider this: In 1940, beef consumption in this country was about 50 pounds per year; during the past 30 years that amount has more than doubled. Obviously, a high beef diet has not, of itself, made us all thin.

For weight loss the motto is: no special foods, no forbidden foods. Just eat half the normal foods. Calories are all alike, regardless of the source. Expensive, cheap or free; "fattening" food, "slimming" foods--the whole point is just *don't eat too much*.

Avoidance of obesity is certainly beneficial. It results in improvement of high blood pressure, diabetes and life expectancy. What about the person, as distinct from the public health statistics? Obviously, no one is just a physiological machine--a balance of the arithmetic of food intake and caloric output. Will the person within be happier in a thin body? Will the new means of dealing with boredom and various hungers lead to contentment?

Who knows? For most of us, life will not be better; and without innate intelligence we will abandon the programme. For those who are really motivated to stick it out, the rewards probably will be worth the toil. But one thing is for sure: *Easier by far than cure is prevention*.

The Mother's Prayer--"Please make me thin and my baby fat",--should change to "Help me get thinner, and let my baby never be fat". Excess feeding in infancy and adolescence may well increase the fat cells in the human body, with each cell crying out for its share of fattening food.

Family food habits are taken up by the very young, as are other cultural patterns. If you truly want your child to thrive, and to avoid the adult problems of obesity, fad diets, hormone shots and diet pills, or even silver staples in the ears, start as early as possible. Don't give candy as a reward, don't have ice cream around the house. Go easy on the whole milk, with its excessive fat content and don't stuff mashed potatoes into your child's fat little face because she looks like such a cute little cherub. Whether or not you can win your battle against obesity, you can help save your child from ever having to wage the same battle.

*Summary*

Weight control is desirable, it is possible, it is difficult. You don't need to buy popular books, or expensive foods. You can lose weight by just cutting your food intake in half, increasing your physical activity and sticking to it. You can weigh every day, keep a record, and make sure the long-term trend is in the right direction. And you can help future generations by not feeding them to fatness in their first year or two.

*CAJANAQUOTE*

*"Eat slowly; only men in rags  
And gluttons old in sin  
Mistake themselves for carpet bags  
And shovel victuals in".*

*Sir Walter Raleigh  
(Sometime Professor of Poetry at Oxford)*

COW'S HIDE AS FOOD!

by

Sadie Campbell\*

Cow's hide is used as food by a cross section of families in the Jamaican population. The reasons given are:

- (1) It is believed to strengthen the backs of men and the nerves of women i.e. improves sexual prowess.
- (2) 'Bulk' is obtained when the product is cooked; assuring a bellyful.
- (3) It is economical in comparison with other protein-rich foods.

The second reason is perhaps the only one which is clearly undeniable. The third is surely questionable in these days in the light of its nutritive value, the time involved in preparing it for consumption, and the current price which, at time of writing, is \$1 (Ja.) per pound, but it is best left for the readers to judge. The first reason is undoubtedly psychological, but so warmly is it defended by the men in particular, that there is no wonder it occupies the number one position.

*Preparation for Cooking*

The hide is usually dehaired by singeing before purchase by the householder who scrapes away the discolouration caused by soot, washes the hide and puts it to soak in water overnight. It is then boiled for 3-4 hours (or pressure cooked for 1 hour) and when about half of that time has elapsed, soaked broad beans or other types of peas or beans are added.

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\*Mrs. Campbell is the Principal Scientific Officer (Food and Nutrition) at the Scientific Research Council of Jamaica.

Wheat flour "spinners" (dumplings) and flavouring agents such as pickled pig's tail and typical seasoning (garlic, onion, escallion and hot pepper) are also added.

#### *Nutritional Value*

As usually purchased (43% moisture), hides have a protein content of 54% (assuming that all the nitrogen is present in the form of protein), but this is mostly gelatin derived from the dissolution of collagen (protein from connective tissue).

The utilization of gelatin by the body is extremely low; having a Net Protein Utilization (NPU) of 2.5% as compared with 70% for muscle which provides most of the meat we consume. This low utilization means that a meal of cow's hide prepared without legumes and/or cereals provides the eater with very little useful dietary protein. The low utilization of gelatin is associated with the imbalance of the essential amino acids in its composition. This imbalance is created by the complete absence of tryptophan, the deficiency of the sulphur-containing amino acids and the disproportionately high levels of certain non-essential amino acids.

Gelatin is, however, highly digestible and a rich source of lysine, which makes it capable of correcting the deficiency of this amino acid in cereal protein; further supplementation is effected when gelatin is prepared in conjunction with legumes, and this is the traditional method of preparation as noted in the recipes collected through the Jamaica Festival Commission.

In the absence of data on the likely utilization of protein from hide in composite dishes, it is reasonable to assume that while it might not approach the 70% determined for mixed diets in the Caribbean Regions it would nonetheless be considerably higher than the 2.5% for gelatin alone.

*Hygiene*

Hides are not at present subject to official inspection by food inspectors and there is the possibility that they may carry excessive pesticide residues or disease organisms thereby becoming a potential health hazard. This danger should not be neglected especially since the number of hides consumed is not small. In 1971, for example, the total number of hides produced in Jamaica was 55,368 and of this number only 25,573 were processed at the local tannery. While a percentage of those not reaching the tannery may have been privately burned or spoiled it is reasonable to assume that a large proportion was eaten.

*Economics*

If the cost per unit selling price of hide be taken as \$1, the main part of a meal comprised of 1 lb. hide,  $\frac{1}{2}$  pint or 1 cup dried peas,  $\frac{1}{4}$  lb. of wheat flour for "spinners" and cooked for 3-4 hours with kerosene as fuel, the cost would be in the vicinity of \$1.35 (Ja.) for a family of 4 or 5, that is 27-34¢ per person.

A similar dish in which either pig's trotters, beef stew or cow's foot was substituted for the hide would cost approximately half as much more because of the inherent waste in the form of bone in the trotters and cow's foot in particular. Preparation time for these substitutes is considerably less, however, and in the case of the stew, good quality protein is assured.

*Conclusion*

After the foregoing discussion, is cow's hide "in" or "out" as a food? It seems to me it is "in" unless the price becomes prohibitive or legislation is brought to bear against it as a food.



SOME NUTRITIONAL IMPLICATIONS OF WHEAT SUBSTITUTION  
IN THE CARIBBEAN

by

*Omwale\**

This contribution to the CAJANUS debate on staple foods for the Caribbean is largely a reaction to Dr. Sammy's article published in an earlier issue.<sup>1</sup> The approach stems from considerable agreement with his views given certain reservations about problem formulation and data specificity.

The reservations specially concern the following: (1) The implied view of food as being either carbohydrate or protein, etc. (2) The assumption that fortification is justified if the substitute staple contains less protein than pure wheat. (3) The calculations of protein content of mixtures which suggest their deficiency in relation to wheat. Apart from these points there seems particular merit in his identification of specific groups at risk of malnutrition, e.g. the poor. The arguments about income generation and development of technology arising from a wheat substitution programme are powerful. Finally, his concern for production cost analysis as opposed to a consideration limited to current retail prices is certainly welcome. Consequently what follows is a brief development of these points.

*The Concept of Carbohydrate Foods*

It is unfortunate that nutritionists have propagated the concept of protein foods, energy or carbohydrate foods and protective foods. In the first place people just do not eat proteins or carbohydrates as such; they eat food. Secondly, it is limited and inappropriate to consider staples as

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\**Omwale is a senior lecturer in the Department of Biology, University of Guyana.*

energy or carbohydrate foods when they supply the greater part of many healthy people's dietary protein intake. In fact this approach is partly responsible for the continuing misconception, even among some nutritionists, that poor people have a "protein problem" that needs to be solved by the consumption of "protein foods" especially meat and milk. Consequently one frequently reads of an animal protein deficiency; but this cannot be demonstrated on strict nutritional (as opposed to taste) grounds.

#### *Problem Formulation*

In matters like these one needs to ask who is at risk of malnutrition. Specifically, what types of persons are short of what, where and by how much? For instance, it is not sufficient for planning purposes to speak of an average contribution of 33% by wheat to regional energy intake. For if 33% of everybody's energy is derived from wheat, then all (100%) are affected by substitution. If on the other hand the entire energy intake of 33% of the population is derived from wheat, then only 33% are affected by a replacement policy. Furthermore, if the entire 33% in the latter case is composed of rich persons, then in Dr. Sammy's opinion (and mine) a nutritional problem would hardly arise from substitution.

It is clear that highly disaggregated information on consumption patterns is required. Undoubtedly the data exists, at least in raw form, in the comprehensive surveys recently conducted by regional governments and CFNI. But even if poor people were consuming wheat and suffered lower protein intakes following substitution, might we expect a "protein problem" to arise? As Dr. Gurney's article <sup>2</sup> indicated, the major regional problem is one of energy insufficiency. Any protein insufficiency could be regarded as resulting from inadequate food intake, since enough of the same food to satisfy energy needs, would also satisfy protein requirements in almost all cases. Furthermore, protein is largely used as energy when the diet is deficient in the latter. To fortify a wheat substitute with synthetic amino acids or legumes under such circumstances would be to supply extra energy uneconomically. A need for fortification has to be demonstrated in the

context of a careful definition of the relevant nutrition problem. No need has been thus demonstrated with respect to wheat substitution in the West Indies.

#### *Protein Content of Staples*

The consideration of protein as a percentage, by weight, of staples is inadequate for nutritional purposes. The differences in amino acid composition and consequently the differences in rates of utilization of proteins from various staples require a more detailed statement. A convenient unit is the NDpE% - net (utilizable) dietary protein energy expressed as a percentage of total energy in the staple. As table 1 shows, wheat is inferior to rice by either of two standard methods of estimation; i.e. net protein utilization (NPU) estimated from experiments with young children or protein scores calculated by comparing amino acid composition with a reference pattern having NPU = 100%. Yams are also superior to wheat by the protein score method. Payne<sup>3</sup> supports current arguments that 2-3 year old children are unlikely to suffer dietary protein deficiency in the absence of energy deficiency if they consume foods with an NDpE% of a little over 5.0. Clearly only cassava and plantains, from the table, are outside of this category. Even then certain mixtures of these with cereals can still be satisfactory. Of course, adults as a group have even lower NDpE% requirements than children: Infants constitute a special problem involving food bulk, that is not readily solved by straight wheat consumption in any event.

Table 1: Ratio of utilizable protein to energy (NDP<sub>E</sub>%) of staples based on two different assessments of protein quality. (After Payne<sup>3</sup>).

STAPLE	Utilizable protein % of energy calculated as crude protein energy % multiplied by:	
	NPU (child)*	Protein Score**
Wheat	5.2	5.6
Rice	6.1	6.5
Corn	4.8	5.4
Yam	-	6.0
Plantain	-	2.3
Cassava	-	1.5

\*Based on Swaminathan<sup>4</sup>. \*\*Based on reference pattern and procedures suggested by FAO/WHO<sup>5</sup>.

#### *Production Costs of Staples*

Admittedly current retail prices make cornmeal a comparatively cheap source of energy. However, planning requires consideration of potential that can be developed. It may well turn out that other staples will be cheaper in the long run and this must be taken account of now. Table 2 compares costs of production of 4 staples expressed as Guyana cents\* per 1000 calories produced daily on a hectare of land at 1973 yields and costs. Looked at in this way energy is more expensive to produce as corn than as yam, sweet potato and rice. Perhaps of more importance is the likelihood that agronomists, breeders, etc. can do more to develop root crops than corn which has been more extensively researched. Even in 1973, as the 6th column in table 2 indicates, yam energy yields in West Irian were 2½ times that in the West Indies; corn energy yields from the CENTENO demonstration plots in Trinidad were 2<sup>1</sup>/<sub>3</sub> times the regional average.

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\*(1 Guyana cent = 0.42 U.S. cents).

Table 2: Comparison of local production costs of 4 staples commonly used in the Caribbean.

STAPLE CROP	GROWTH PERIOD (days)	YIELD Kg/ha	EDIBLE PORTION %	ENERGY PRODUCED		PRODUCTION COSTS G cents /1000 C/ha/day
				C/100g	Cx10 <sup>3</sup> /ha/day	
Rice (Av.)	100	2300	70	370	59.6	5.3
Sweet potato	120	15060	88	114	143.1	6.3
Yam (Av.)	250	25100	85	104	104.4	7.4
Yam (W. Irian)*	300	70120	90	104	257.4	
Corn (Av.)	120	1680	100	363	50.8	8.3
Corn (Demo.)	120	4000	100	363	118.6	

\*Yield data from Coursey and Martin<sup>6</sup>.

Obviously increased yields partly depend on some degree of mechanization, economies of scale and higher levels of management than at present. In a number of ways these need to be balanced against efforts to promote small farmers if the nutritional situation of the poor is to improve. However, cooperatives can present a partial solution of these problems while national planning policy should relate retail prices to costs of production.

On the presently available evidence it would seem that a wheat substitution policy is unlikely to result in nutritional deterioration in the region. Indeed it can improve the nutritional status of groups currently at risk. This could be effected if production of substitute staples is organized specifically with the poor in mind. The rural poor need to be given land, credit, extension services and guaranteed prices for these crops; with the high income elasticities of demand for food characteristic of such groups, dietary and nutritional improvement is inevitable. At the same time the urban poor can be organized to benefit particularly from the jobs generated by the technological requirements to which Dr. Sammy referred. In all cases what is required is a socio-economic policy (by the

political powers) which will move us in the direction of, (1) reducing dependence on the external world and (2) promoting income improvement among poor families. The issue of subsidies considered by Dr. Sammy is also relevant.

Whatever we do in considering this matter, three processes are indispensable:

- (1) We need to identify the nutritionally at risk groups in respect of the proposed change of staple.
- (2) We must carefully evaluate the likely effects on *them* of an *optimum* strategy for production and *consumption* of the new staples.
- (3) We must decide whether the flow of net benefits, to the community, over time justifies the proposed change. However we must be careful to particularly weigh heavily the needs of the poor and the right to health, in itself, as opposed to the production utility of good nourishment.

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## NEWSPAPER CLIPPINGS

*It is interesting to note that the following two editorials appeared on the same day in Jamaica's two daily newspapers.*

THE EDITOR

### THE FOOD PROBLEM

*From The Jamaica Daily News (Jamaica) 26 June 1975*

The statement made to the World Food Council by the Chief of the U.N. Food and Agriculture Organisation (F.A.O.), Dr. Adekke Boerma, that the target set for ending world hunger in 10 years now seems unrealistic, places a new urgency on the CARICOM countries to push ahead with the Caribbean Food Plan which is now being studied at the Agricultural Ministers' meeting in Belize.

The world situation continues to be a cause for major concern, and in the light of what Dr. Boerma had to say to the Council, it is no exaggeration to describe his remarks as a "bombshell", as was said by senior F.A.O. officials.

While the Americans appear to be still willing to back the plan for setting up a system of international grain banks as proposed by Dr. Kissinger last November, the plan cannot get off the ground without unqualified support from the European Common Market. This support does not seem to be forthcoming at this point, what with the Common Market wishing to protect European farmers through a formal agreement on pricing and size of food stocks. Reluctance on the part of Russia and China to release information on their grain stocks, further complicates the problem.

Domestic political considerations and national self-interest are always hindrances to progress in areas of international co-operation which could help to ease the burden of the developing nations. The question facing the poorer nations therefore, must be one of speeding up their own plans for self-sufficiency wherever possible and practicable.

Competing priorities in the social fields add to the burden facing the governments of the developing countries, and in the final analysis the solution to the problems will turn on whether or not countries like the Caribbean can afford to continue their dependence on the metropolitan countries for the bulk of their food.

The simple fact is that they cannot. And this is why the decisions reached at the ministerial meeting in Belize and the speed with which the regional governments can follow up these decisions with implementation are of such vital importance.

When the idea of setting up a Caribbean Food Corporation was first discussed last year, the basic consideration at the meeting which took place at Jamaica House between Mr. Manley, Dr. Williams and Mr. Hubert Jack, Guyana's Minister of Energy and Natural Resources, was how to mobilise the resources of the region to achieve the greatest possible self-sufficiency in food production.

The region's food imports bill was put last August at a figure of about \$1,000 million (Trinidad), or about J\$450 million. This figure, taking into account world inflation, could reach something in the region of J\$600 million in the next year or two.

Efforts have been made and are being made throughout the Caribbean region, through import restrictions and substitutions, and through new emphases in agricultural production and development to correct this chronic drain on foreign reserves. But there is in fact no short term solution to the problem.

The Jamaica-Belize project involving the cultivation of corn, red kidney beans and soya, and the programme which the Caribbean Development Bank has outlined for the Guyana-Trinidad-St. Kitts project, if carried through, should bring some 80,000 acres of land into food production.



Similar projects will no doubt be looked at, but in the interim, national production levels must be pushed upwards. Each territory at the national level must side by side with the more elaborate projects such as planned for Belize and Guyana, look towards either diversification or intensification according to its own peculiar needs and circumstances.

But the overall objective of CARICOM self-sufficiency must not be lost sight of.

In the long term, the answer to overcoming the rising costs of food imports, and the reduction in the volume of imports will necessitate a rationalisation of the region's agricultural industry.

Much will also depend on an adequate flow of market information on the availability and prices of produce within the region, and the ability to move the different commodities in good marketable condition.

In his six-point plan for CARICOM, the CDB President Mr. Demas has called for a review of the present agricultural protocol, and this would seem to be a number one priority when considering the need to be self-sufficient in food.

But our peoples will have to go through a major change in eating habits before the region can come to grips with the problem in its totality.

CAJANAQUOTE

*"... , the problem of grain for the feeding of livestock is of greater interest in financial circles than that for feeding for millions of people: it seems that food demand for livestock in industrialized countries is a problem that can be solved while food demand for man cannot."*

*Quoted in Ceres (FAO Review on Development), May-June 1975  
Vol. 8, No. 3, p. 6.*

*WORLD FOOD*

*From The Daily Gleaner (Jamaica) 26 June 1975*

The possibility that millions of people will soon die from lack of food, although the world supply situation is better this year than last year has prompted the establishment of the United Nations World Food Council which is meeting in Rome, Italy.

The main function of the Food Council which is made up of representatives of 36 countries is to see how it can encourage countries to increase the production of food. It is felt that little will be gained from food aid and the international fund for agricultural development which will have an initial capital of US\$1,200 million. If three-fifths of the world's population is undernourished, the proposed capital of the fund means about fifty cents per person which is totally inadequate.

It would seem that the Food Council will investigate very closely the production policies of each country and come up with specific recommendations as to how production and productivity can be improved. As far as we can see, this is the only effective way the Council, or any other international body for that matter, can effectively help the world food situation.

With present population growth rates the demand on the food production resources of the world will double in the next 35 or 40 years, and this does not even take into account any improvement in the standard of nutrition.

While the Council is meeting in Rome to discuss the dire world food situation, a short distance away, Pope Paul has lashed out again against artificial birth control.

But it would be futile to sit back and hope that man will invent new methods of production which will allow for a 100 per cent increase in food production over the next 35 to 40 years. Even if he were to perform this miracle, could he do it again over the following generation when population will again double?

In the next century, world population will have increased almost sixteen times, if present population growth rates continue at these levels. It is not just a matter of trying to find more food; it is also a matter of trying to slow down the population growth rate by means other than by eventual starvation.

It is clear that not enough attention has been paid to the question of how the world plans to feed its people in the future. We tend to leave the problem to future generations, hoping vaguely that they will solve it. But the time to prepare the plans and to begin the action is now.

CAJANAQUOTE

*"Food production must be well planned and the nutrition phenomenon well analysed. This is being done and could be done better if nations had the political will to act. Evaluation techniques of the various restraints would allow choices and options. Integrated with other national and international contingencies, these would enable the formulation of policies to indicate priorities. This might be the beginning of an era of food justice, of knowledge and control of the food problem on a worldwide scale. Otherwise, the world will continue, rightly or wrongly, to be concerned with total figures, dealing with million of tons of surpluses used in certain countries or millions of tons of shortages in others, without clearly identifying the recipients of eventual aid and especially without anything being done to deal with the deep and fundamental causes of this injustice."*

*Quoted in Ceres (FAO Review  
on Development) May-June 1975  
Vol. 8, No. 3, p. 6.*

*MATTER OF LIFE AND DEATH*

*From the Sunday Advocate-News, Barbados, 4 May 1975*

The Housecraft Centre is embarking on a research project on deep sea fish embracing the texture, durability and taste as compared with local inshore fish and ways of preparing it.

The project could prove to be an invaluable asset in our fight to acquire new sources of protein to feed our nation.

In recent years with the development of the shrimp fishing industry in Barbados, considerable quantities of deep sea fish have become available on the local market. Prices have generally been lower than those for fish traditionally caught around our shores, but the majority of Barbadians shy away from buying even though this could be a means of easing the ever growing strains on domestic food budgets.

The reason is not hard to seek. Man is reluctant to change, despite the fact that life itself is a continuous process of changes. Therefore Barbadians will not take readily to unfamiliar foods even though they are cheaper.

Because of the different qualities and tastes of the deep sea fish, they are unpopular on menus. But the world food situation is such that sticking to familiar products is a luxury we simply cannot afford.

If any organisation can generate a breakthrough in showing Barbadians that the fish are palatable and nourishing, it should be the Housecraft Centre. This institution has achieved significant success in motivating Barbadian women especially towards developing domestic skills necessary to ensure a fuller life.

Among its better known achievements are recipes and methods of cooking fine meals from locally available ingredients and doing this efficiently and cheaply. Preserves are included in the list of its training projects.

Barbados' fishery has muddled along in a singularly unimaginative manner with the result that our people are eating at a level far lower than they might had the full potential of the seas around us been tapped.

An indication of the value other countries place on marine resources can be deduced from the frequent international incidents involving fishing trawlers and the sophistication developed in the methods of fisheries. Nations notable for their fisheries development include Japan, Peru, Britain, Canada, and Iceland. Their annual catch is measured in terms of millions of tons. Barbados records hers in thousands of pounds.

For generations we have seen evidence around our shores that fishermen of other nations range the waters nearby, yet we ourselves barely scratch the surface of a practically limitless treasury of food.

Our supplies of fish are brought back mainly by small craft which venture out only for periods of about 24 hours and return with meagre catches because of primitive methods.

We have even had a United Nations Development Project based on our island, but little apparent benefit has accrued to our fisheries. A locally financed company with Government participation has revived the shrimp industry and as a corollary fish has been coming to our shores in considerably quantities.

The trawlers of this company can range far beyond the limits of the usual small craft, stay out longer and are equipped to preserve the catch in prime condition until it returns to port. Despite improved technology and the fact that refrigeration is available in thousands of Barbadian homes, our people seem still not to understand or be willing to learn how to capitalise on this source of food.

Studies of the Food and Agriculture Organisation have revealed a grim picture regarding the world's ability to feed its population, and means are being evolved to cope with the problem. With all the information available and a source ready at hand it is nothing short of senseless for Barbadians to continue despising and avoiding deep sea fish.

With the projected experiments and the revelation of their success which bids fair to materialise, the taboo could well be broken. Without being over dramatic it could be a matter of life and death for us.

CAJANAQUOTE

"Today, the total area under "sea culture" is around 2 million hectares, and the yield, 5 million tons a year. Countless estuaries, swamps, fresh- and saltwater lagoons, shallow coastal areas, lakes and ponds can be added to this, and the possibility of "sea ranches," where fish would be bred and reared in large, open bodies of water, is under study.

Yields can be maximized. Already, in some areas, they have reached 8,500 kg per hectare. Considering that 120 g of fish supply half of a person's daily protein requirements, fish farming is productive indeed!"

Quoted in *Ceres (FAO Review on Development)*, May-June 1975  
Vol. 8, No. 3, p. 66.

## NEWS BRIEFS

A special Committee on Diabetes recently met at the offices of CAREC (Caribbean Epidemiological Centre) in Trinidad. The Committee consisted of physicians from the region, representatives of the University of the West Indies, CFNI, CAREC, PAHO Headquarters and overseas consultants. The purpose of the meeting was to discuss the nature and feasibility of a project to study the epidemiology of diabetes in the Caribbean.

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This year the 10th West Indies Agricultural Economics Conference of the Caribbean Agro-economic Society was held jointly with CFNI's Eighth Technical Group Meeting in Georgetown, Guyana from April 6th to 12th.

The theme of the Conference was "Maximising Self-sufficiency in Food in the Commonwealth Caribbean".

More than 130 persons from government and university departments, private organisations, UN agencies, the Caricom Secretariat, Caribbean Development Bank, the Ford Foundation, Commonwealth Secretariat, and the Inter-American Development Bank attended.

A wide range of papers based on regional and national programmes and covering all aspects of food production was presented.

A report on this meeting is available from CFNI. The Proceedings of the Conference are expected to be published at a later date.

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An In-Service training course in "Management in Dietetics" was held in Trinidad in June under the auspices of the Ministry of Health and CFNI. Dr. Aimee Moore, Professor of Food Systems, Management Director, Department of Nutrition and Dietetics, Medical Centre, Columbia, Missouri, U.S.A., was visiting Consultant for the course attended by about 20 nutritionists and dietitians mainly from Trinidad and Tobago.

The Annual General meeting of the Caribbean Association of Nutritionists and Dietitians (CANDI) also took place in Trinidad in June. The new president for the year 1975-76 is Mrs. Sadie Campbell of Jamaica.

A full report will appear in our next issue.

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In May, *Cajanus* said goodbye to its editor, Dr. Michael Gurney who left CFNI to take up a WHO post in Beirut. On behalf of the staff of CFNI, the readers of *Cajanus* and students of nutrition throughout the Caribbean, we wish Dr. Gurney and his family the best of luck and a peaceful and happy sojourn in the Lebanon.

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With the departure of Dr. Gurney, *Cajanus* has a new editor - Dr. Kenneth Antrobus, Medical Nutritionist on the staff of CFNI.

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\* *Cajanus* salutes 'Nyam News' on its inception \*

This useful channel of news, reports and comment on developments in food and nutrition in or affecting the Caribbean Region, is issued by the CFNI Information Service. Through its periodic press releases, six of which have appeared over the period June-August, it attempts to keep the public informed and aware of issues in food and nutrition which are worthy of mention, and has so far succeeded in making an impact on the communications scene.



## FROM THE EDITOR

### CONSUMER POWER vs. INFLATION

Nothing seems to make people join forces so readily as the prospect of having to face a hostile foe or contend with some common adversity. Inflation has been the enemy of the consumer and a root-cause of much of the adversity he (or, more realistically, she) has had to fight against particularly in the last two years.

Consumers can realise, only to a small degree, their full strength when functioning as individuals. Real consumer power depends very much on numerical strength and the quality of the action that these numbers can generate. The consumer's role, however, begins with responsibility to self which is no more than a form of self-discipline linked with the practice of good consumer habits, many of which have been succinctly reproduced on page 275 from a release by the National Consumers League of Jamaica.

Not only must the consumer promote through such groups and associations, dialogue with the relevant government and commercial sectors aimed at the establishment of appropriate regulations and then mutually beneficial machinery, but, having secured their establishment, she must ensure that these measures are publicised, understood and used with proper force and discretion by fellow consumers.

In these times, it is becoming increasingly incumbent on the consumer that she adhere tenaciously to the spirit and practice of the timeless slogan - "value for money". Nowhere is this more fundamental than in relation to the food we eat: an honest description of the product (emphasised by Dr. Campbell in his article on Our Modern "Wonder" Foods), quality and fair quantity - all at a good price need to be among the prime preoccupations of the housewife who wants to keep her cost of eating down and thereby beat inflation.

Cajanus congratulates all these Consumer Associations in the Caribbean for having so valiantly led the fight for the preservation and continued nourishment of their species against the persistent curse of inflation, and

wishes them ever increasing fulfilment in the use of the great strength that is theirs - consumer power.

THE EDITOR

CAJANAQUOTE

"Nobody can protect you as well as yourself".

Vie Mendes  
President, National Consumers League  
(Jamaica)

## TOPICS AND COMMENTS

*INTERNATIONAL FOOD POLICY RESEARCH INSTITUTE - \$2 million grant to boost world production\**

The Food and Agriculture Organization has estimated that, if present trends continue, the annual food deficits of developing countries will increase by 1985 to 85 million metric tons from the level in recent years of some 20 million tons. To cover such a deficit without resorting to commercial imports or food aid relief would require a 50 percent increase in food production in Africa and a 40 percent increase in Asia.

During the last decade new research centres have been established in several tropical countries to develop improved crop varieties and in other ways to support a drive for greater food production. Two examples are the International Crops Research Institute for the Semi-Arid Tropics in India and the International Institute for Tropical Agriculture in Nigeria. The Consultative Group on International Agricultural Research (CGIAR) was set up under World Bank auspices to help coordinate the work of the growing number of these technical institutes.

At a seminar sponsored by the CGIAR in July 1973 there was general agreement that two gaps needed filling which the technically focussed centres of agriculture research should not be expected to cover. One of these gaps was in information and analysis of the current world food situation; the other was an organized research program on the international policy aspects of food production, trade and related issues.

A sub-committee of the CGIAR's Technical Advisory Committee was formed under Sir John Crawford of Australia to recommend methods of filling these gaps. Following discussion of the sub-committee's report in the CGIAR and with interested international organizations, the International Development Research Centre (IDRC) and the two foundations decided to proceed with establishment of the International Food Policy Research Institute (IFPRI) as an independent non-profit institution.

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\*From "IDRC News", 22 September 1975.

Meetings of the initial trustees took place in March and May 1975. At the latter meeting additional trustees were elected to the Board, including Dr. Norman Borlaug. Sir John Crawford former Vice Chancellor of the Australian National University was elected Chairman, and Dr. Dale Hathaway of the Ford Foundation and a prominent American agricultural economist was invited to serve as Director. The programme of work for the Institute was considered and approved at a meeting of the full Board of IFPRI in July 1975.

The objectives of IFPRI are:

1. To identify major opportunities for expanding world food production with particular emphasis on the development actions and policies best suited to remove present constraints to production and establish the framework for the sustained use of the potential agricultural capacities existing in low-income nations.
2. To determine and publicize those actions which could be undertaken, and those policies which could be adopted by governments, regional and international agencies, to effect a continued increase in the quantity and quality of food supplies available to all people through enhanced food production, wider trade opportunities, and improved efficiency and equity in food distribution.
3. To provide information, an expanded base of knowledge and objective analysis about world food problems, and to indicate the opportunities and options open for their solution.

Selected research projects will be carried out by multidisciplinary teams, as far as possible in cooperation with the staff of other national and international institutions. The Food and Agriculture Organization, which has recently set up an Early Warning and Food Information System, the World Bank and the US Department of Agriculture have all offered to cooperate.

As well as five or six senior professionals with such specializations as production economics, irrigation engineering, land use and food trade, the staff will include about 12 research associates recruited for terms of two

years or less. The rotation of these short-term professionals will provide an opportunity for scientists and economists from developing countries to build links for collaborative research with other scientists in the countries from which the associates come.

The IDRC grant of \$2,250,000 will help to cover salaries of both long-term and short-term staff, as well as operating expenses. A contribution of a further \$2.0 million is expected from the Ford and Rockefeller Foundations.

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

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#### WORLD FOOD COUNCIL

The World Food Council's role is both strategic and tactical: First, to pull together, the political will, decisive leadership, technical guidance and coordination needed in the fields of rural development and food policy - and then to deploy all the available resources of the international system, integrating and coordinating in particular the work of United Nations agencies such as the FAO and the United Nations Development Programme (UNDP). One important function of the Council will be to coordinate the work of several existing bodies and new ones established since the Conference - committees and consultative groups assigned to handle research, investment, fertilizers, food security, food aid policies, nutrition and rural development.

*HINTS FOR GOOD SHOPPING\**

- (1) See that the store has a scale. If it hasn't, report it to your Consumer Association.
- (2) See that the scale pointer is pointing to zero before weighing anything.
- (3) Get the price per pound before you buy.
- (4) You are entitled to the NET weight of the purchase. This does not include boxes, cartons, bags or wrapping paper.
- (5) Buy fresh vegetables and fruits in SEASON. They taste better and should be lower in price.
- (6) DO NOT BE FOOLED by the size of the container or box. Look for the weight or content statement.
- (7) Study your labels before you buy. NOTE that all pre-packed foods have on the net weight and contents.
- (8) Work out the cost yourself. Question a higher figure.
- (9) Check purchase against itemized bill if you have the time, otherwise count your purchases. Most supermarkets check item by item.
- (10) Wherever possible, buy in person. If you must order by phone ask for an itemized bill to accompany the goods.
- (11) BEWARE of sensational claims or offers.
- (12) If a reputable store has a sale or specials, STOCK UP but only if your budget can stand it.
- (13) If your purchase was advertised, take the "ad" with you when you go shopping.
- (14) Ask the assistant to write on the sales slip any special claims made for the item, e.g. ALL SILK, HAND-MADE.

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*\*These hints appeared as part of CONSUMER EDUCATION MONTH FEATURE in the Sunday Gleaner, 5 October 1975.*

- (15) All merchandise on display in the store must have its price clearly marked on a tag, sign or poster.
- (16) Make a list of what you want before you go out. If you are trying to economize do not buy anything which is not on the list.
- (17) DO NOT GO SHOPPING ON AN EMPTY STOMACH. Have a small snack before.
- (18) If you suspect that you have been cheated, write to your Consumer Association.

CAJANAQUOTE

*"Bread is not only filling, but also possesses an aura of sacredness, being believed to be the essence of life. The name given to bread is aish which literally means life. It is profane to put bread on the ground, and every effort must be made to pick up any crumb that falls to the ground for fear of it being trodden on...Children are also enjoined to kiss bread if it falls from their hands on the ground, and if they find it lying in the street to remove it into a crevice in the wall."*

H. Ammar (1954)

*"Growing up in an Egyptian Village"*

*WHO IS RESPONSIBLE*

*From Ceres, July-August 1975*

Who should have the responsibility for feeding a nation? The politician, the economist, the planner, the nutritionist, the food industry, the retailer? All see nutrition within the limited context of their own concerns while the consumer must cope with the social and economical repercussions of successes and failures of a system that lacks any overall coordination. Those outside the mainstream of the economy suffer most. They and their children are starving.

Nutritionists are partly at fault. In the past, they have considered malnutrition as a problem for them alone to understand and solve. The truth is that the issue is too complex to be solved by one discipline. Only a coordinated multidisciplinary approach can be successful.

More and more planners, politicians and national leaders are aware of the existence of food and nutrition policies and the need of integrating them into long-range planning. As yet, there is no efficient manner of giving a nutrition dimension to national development plans, and no country has actually attempted to formulate, and implement such a policy\*. Some developed countries have a food policy that has little to do with distribution and consumer accessibility but mostly follows a formula that merely attempts to balance production and external trade against domestic demand. The many factors that influence and determine the actual nutrition of the population are rarely considered.

An effective food and nutrition policy requires a basic appreciation of these factors and nutritional needs with a coordination of efforts and a firm political commitment. Within the country, all sectors concerned with food and so frequently working independently must be brought together to

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\*The Governments of Jamaica and St. Lucia have formulated National Food and Nutrition Policies and are in the process of implementing these policies.



plan and eventually coordinate and implement the policy. External consultants could assist appropriate personnel (planners, agriculturalists, economists, nutritionists) in the assembly and analysis of information regarding the present food and nutrition situation. This analysis would in turn suggest several essential and optional components of an effective policy. Any strategy chosen must reflect not only the nutritional status of the people, particularly those most susceptible to nutritional insult, but take into account the national structure, the planning capabilities and the resources of the country.

Thus, planners and politicians must become involved in food and nutrition policies, in evaluating the constraints imposed by other sectors in the economy and in assessing the consequences of these commitments on other aspects of development. The strategy chosen will reflect the characteristics of the national structure but the attainment of proper nutrition for the population will be an objective of highest priority in any nation's development plans. Only when this is actively sought will the control of malnutrition be a feasibility.

It may, then, not be too optimistic to hope that successful national food and nutrition policies could become integrated with international policies of population, agriculture adjustment, income distribution and eventually with the formulation of a world food security policy.

CAJANAQUOTE

*"So much is written in nutritional and diet studies about inadequate diets and malnutrition that some of the positive nutritional merits of indigenous diets as well as the element of pleasure in eating need attention."*

Margaret Read

"Culture, Health, and Disease"

"FOOD AND DRINK FOR THE BABY"

by

B. Andrea Okwesa\*

From July 4-15, 1975 at the National Arena, CFNI participated in the "Food and Drink '75" exhibition with a display on infant feeding from birth to eighteen months, entitled "Food and Drink for the Baby '75".

Space was generously donated by a local company and the booth was constructed from our own design utilizing, in the main, local materials.

The theme of the display fell into three sections:-

1. The importance of locally-grown and seasonal foods in the diet.
2. The advantages of breast-feeding and breast milk.
3. The value of home-made multimixes.

Each section received individual treatment on a separate panel of the backdrop of the display. The first panel dealt with the main food groups isolated as being relevant to the Caribbean Region, namely:-

Staples - cereals  
- starchy fruits, roots and tubers  
Peas and beans  
Foods from animals  
Dark green leafy and yellow vegetables  
(Fruits)

Entitled "Foods for the whole family", it displayed colour photographs of all the groups with appropriate captions describing the nutritional benefits of each. Emphasis was given to cereal-legume mixtures such as "roti + dhal", "rice + peas", "peas soup and dumplings" encouraging viewers to "put these together for greater nourishment". It was also stressed that a meal could

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\*Mrs. Okwesa is the Media Officer/Editor at the Caribbean Food and Nutrition Institute.

be balanced and nutritious if it consisted of foods from all the groups except starchy fruits, roots and tubers, even if it did not include foods from animals. The aim of this panel was primarily, to improve the nutritional status of the viewers by encouraging more careful combinations of nutrients in the diet, and to draw attention to the high nutritive value of certain locally-grown foods. Photographs were carefully selected to serve this end.

Panel 2 was headed "Breast milk: the complete baby food". It depicted a colour photograph of a mother breast-feeding her small son who appeared in an adjacent series of photographs showing the foods which a baby needs in the first year of life, e.g. egg, cereal, fruit, etc. Radiating from the breast-feeding picture were six slogans on the theme of breast-feeding and breast milk, such as "Breast milk - the get-together milk". Beneath the picture, a chart outlined the advantages of breast-feeding to mother and baby. Throughout, irridescent mounting-boards in all colours helped to give the photographs greater appeal and lent a certain 'psychedelic' quality to the entire display.

Panel 3 on "Mixed feeding with home-made foods" described the multi-mix principle on three charts, explaining the procedures involved in the preparation of double-, triple- and quadruple-mixes. Each chart was pictorially represented by two close-up photographs in colour showing clearly the proportion of each type of food required in preparing multi-mixes. A series of photographs also traced, step-by-step, the correct methods in preparing food for babies, such as mashing the mixture with a fork then rubbing through a strainer with a wooden spoon. Random interviews with mothers attending the exhibition proved that they were able to conceptualize the process much more clearly after having seen the photographs showing how multimixes were prepared, and, consequently, much more inclined to experiment in their own homes.

In the main area of the display were seven boxes painted in primary colours, to represent the idea of building-blocks (childhood) as well as growth and development. The centrepiece of the booth was an illuminated box

with a transparent facade through which could be seen a cooked meal suitable for consumption by the whole family, with the correct infant portion extracted from each dish shown on the following day. As the dishes were changed periodically throughout the exhibition and were all most attractively prepared and displayed, this feature proved most popular with visitors and there were innumerable requests for the recipes. In anticipation of this, a number of free handouts had been printed in advance on subjects such as: "Feeding the infant", "Fruits and fruit juices for young child feeding", "Multimix feeds for infant and young child feeding", "Breast-feeding", "Banana recipes" and also the popular "Guidelines to Young Child Feeding". Over 2,000 copies of each were printed and the entire collection was exhausted by the end of the exhibition, with several visitors asking whether they could write in for more information.

The text of the exhibition traced the need for a balanced and nutritious diet in the development of the child, and was arranged around the sides of the other boxes. The entire text and larger captions were prepared in our printing unit using either stencils or photographic process.

At the 'exit' a low box served as a table at which a food and nutrition professional - a CFNI staff member, or a staff member from one of the organizations which volunteered assistance - met members of the public. This 'personal touch' served to facilitate important one-to-one communication between the professionals and the public, chiefly expectant mothers and mothers of young children. It was noted from the guest register, in which visitors were invited to record their impressions, that many pregnant women attended and received valuable advice which they claimed was lacking in their antenatal care, particularly encouragement to breast-feed and preparation for breast-feeding.

A useful teaching tool, which enabled the professionals to make their points with more force and clarity, was the Carousel projector, which showed a series of slides on breast-feeding and the food groups. It is hoped that, at the next exhibition in which CFNI participates, this feature will be enhanced by linking the slides with a synchronized sound track on tape for greater appeal and effectiveness.

Press releases on the exhibition were sent to the major newspapers and radio stations in the Caribbean Region, and were published in Jamaica's two daily newspapers. Reprints of articles distributed at the exhibition also appeared in the newspapers' food supplements, one of which devoted almost an entire issue to the subject of infant feeding.

The main objective of CFNI's participation in an exhibition of this nature was to highlight the breast-feeding issue: to inform the public of the advantages and techniques of breast-feeding, viewing it as a crucial first step in the whole infant feeding process which would vitally affect the future development of the child as an important member of society. If the result of CFNI's efforts is that there will be more interest and concern directed towards breast-feeding and better nutrition by parents everywhere, and ultimately, an enlightened change in individual, corporate, professional and government policies related to infant feeding, then the exhibition will have been worthwhile, its objectives realised and CFNI truly deserving of the award for the most effective and dynamic display.

FOLLOW UP

by

*A.I. Patricia Maynard*

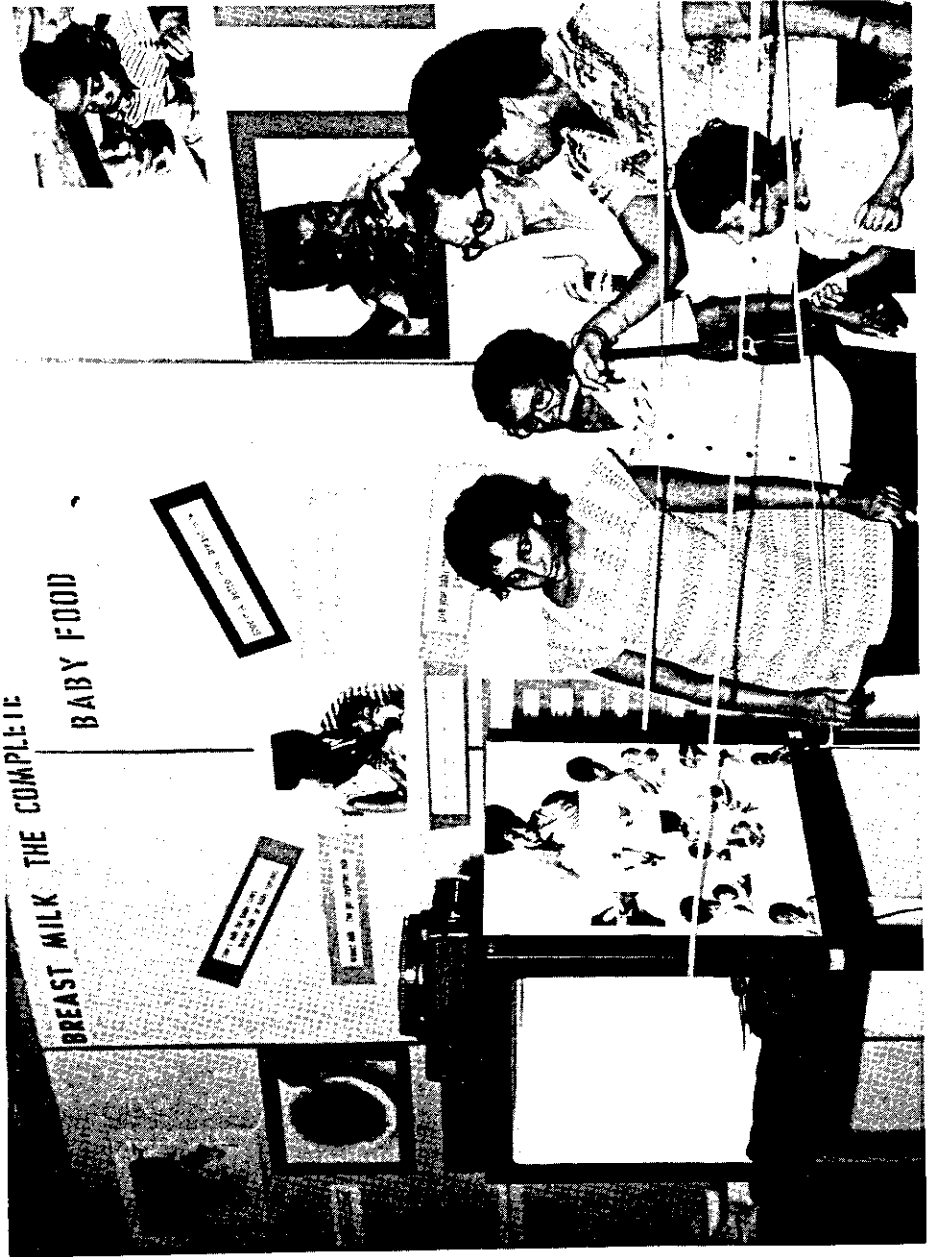
1) In the weeks following the exhibition, one of the mothers who had attended the exhibition came twice to CFNI to receive guidance and counselling regarding her breast-feeding, inasmuch as she would be continuing her university studies after the birth of her child, which was imminent. She also wished to know how to brief her "surrogate mother" in child feeding methods particularly in relation to expressed breast milk. She was also concerned about her diet both during pregnancy and lactation and received advice on this.

2) As a direct result of the exhibition, a local firm of Communication Consultants approached CFNI with a view to obtaining regular contributions on infant feeding and general nutrition for a farm/family oriented newspaper which they would be producing.

3) Also as a result of the exhibition, a CFNI staff member was invited to give talks to community workers at the village level ("village officers") who required some basic nutrition input into their "Family life skills" programme. The kind of information given has ranged from "Feeding the pregnant and lactating woman" through "Infant and young child feeding" (embracing the multimix principle), "Aspects of budgeting for food" and "The feeding of special groups" to "Malnutrition - mild and severe".

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*\*Miss Maynard is the Public Health Nurse (Nutrition Education) at the Caribbean Food and Nutrition Institute.*



OUR MODERN "WONDER" FOODS - HOW GOOD ARE THEY?

by

J.A. Campbell\*

As we turn the dial on the radio or T.V. we hear that there are some wonderful foods on the market these days. We are told that they will do exciting things for us. We are urged to rush out and purchase them: we gain the impression that we can scarcely afford to exist without them.

Most of the advertisements state or imply that the products will promote good health, strength and energy, even help us excel at sports! Everyone wants these qualities.

Let us look at some of the claims and consider the facts - and the fallacies. Are the statements nutritionally sound? Will these products do what the claims state or imply? What is their status in relation to the law? What action can be taken to remedy the situation?

Vitamins and minerals are wonderful substances. As we pointed out in an earlier article (Cajanus, June 1974), they have been credited with many miraculous properties and peddled as cures for all sorts of diseases.

As was also pointed out, man has a daily need for nutrients and if this need is not satisfied, deficiency symptoms will appear. On the other hand, amounts of nutrients in excess of actual needs will not result in superior performance, in either mental or physical endeavours.

Here are some of the claims along with available information on the composition of five products.

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\*Dr. Campbell was formerly the Food and Nutrition Scientist at the Caribbean Food and Nutrition Institute.



*Product A*

The advertisement for *Product A*, a popular dried milk "tonic" food states that it is the food drink of champions, urging mothers to make their child a champion by giving it to him. The label describes the product as a chocolate-flavoured, dried milk and fortified tonic food drink in concentrated, granular form containing not less than 8.5% milk fat.

Nutritional labelling has been faithfully carried out and the nutritional composition per ounce is described as:

500 International Units Vitamin A  
 50 International Units Vitamin B<sub>1</sub>  
 100 International Units Vitamin D<sub>3</sub>

with the proportions of mineral salts being:

Calcium as CaO	180 mg.	
Phosphorus as P <sub>2</sub> O <sub>5</sub>	325 mg.	(P <sub>2</sub> O <sub>5</sub> appears on the label. this is a misprint)
Magnesium as MgO	70 mg.	

On tasting the drink it is found to be as pleasant as the manufacturer attests. But his claim that it is "fortified" and "concentrated" cannot be substantiated. The product is essentially dried milk with lesser amounts of other constituents which are listed as extract of malted barley, milk solids, sugar, cocoa, dairy fat, organic phosphates, iron in an easily assimilated organic form, together with valuable mineral salts of Calcium and Magnesium and added Vitamins A, B<sub>1</sub>, D<sub>3</sub>. An average serving would probably contain about one half ounce of the product, which would supply only half of the above amounts of Vitamins and Minerals. How significant are these additions?

250 I.U. Vitamin A is about 1/10 of the recommended daily allowance (RDA) for this Vitamin and thus scarcely worth mention as a strong point in nutrition.

25 I.U. Vitamin B<sub>1</sub> if this is correct, would supply 0.075 mg. i.e. less than 10% of the RDA. (It should be noted that Vitamin B<sub>1</sub> has not officially been expressed in I.U. for about forty years!).

50 I.U. Vitamin D is also not too significant for children i.e. about 1/8 of the RDA.

The minerals are expressed in an unusual way. Presumably the weights refer to the compounds listed, i.e. there is 180 mg. of CaO. But CaO and P<sub>2</sub>O<sub>5</sub> and the other salts have no significance in nutrition as such and the amounts of the elements which are the nutritionally important part, are not given and require a knowledge of chemistry to calculate.

There is really no need for the addition of phosphorus and magnesium since no problem with these nutrients, or in fact with most of the others except iron, has been shown to exist in Jamaica.

One is therefore left only with the original statement, that the product is a chocolate-flavoured milk drink. Milk supplies many nutrients and children should drink some every day, but not all the children who drink milk, or a particular milk-based food, will necessarily be champions. Obviously, superior athletic performance will depend on many other factors.

#### *Product B*

The advertisement for *Product B*, a brand of liquid skim milk, states that it will provide "the perfect balance" for milk lovers who want to stay slim yet need the extra nutrition of Vitamin A for healthy bodies. The product is further described as "a 2% grade A pasteurized homogenized fortified low fat milk".

The idea of advising consumers that this product is 'low fat' is an excellent one - many people consume too much fat or calories - except that the fat content is not really very low (2%) compared with regular milk (3.2 - 3.5%). Possibly, consumers should not become too optimistic as to what this difference will do in terms of weight-loss!

It is also a good idea to add Vitamin A to replace that lost when the fat is partially removed - but does this render the product 'fortified'? Nor is it really "extra nutrition" - it is just what one would expect to obtain from a milk product.

The real problem arises in interpreting the meaning of "the perfect balance". What is the significance of this? It sounds good! It must have some importance since it is the theme of the advertising copy. It merely demonstrates the use of highly-emotive words without any real meaning in nutritional terms, an adept advertising technique to trick the consumer into believing that the product is superior.

Further, we are admonished "drink *Product B* and stay healthy". The next product to be discussed says essentially the same thing but for entirely different reasons.

Will a slight contribution of Vitamin A and a slight reduction in fat content ensure health? - How?

#### *Product C*

Now, let us look at *Product C*, this time a black currant syrup which claims to help build strong bones and teeth and describes itself as "the great natural health drink of our time" and "one of the richest sources of Vitamin C". The label states that the product is a "black currant health drink with extra Vitamin C, made from the pure juice of English black currants, one of the richest sources of natural Vitamin C". The nutritional composition is described as not less than 30 mg. Vitamin C per fl. oz. (82 mg. per 100 g.), and it also contains not more than 0.035% of sulphur dioxide (as a preservative). It is true that the product is a delightfully refreshing drink with the flavour of English black currants. It is true that these currants are a rich source of Vitamin C (about 200 mg. per 100 gm.), but the important point is whether or not the final product as recommended for use is a rich source. Actually, with added Vitamin C, the product contains 30 mg. per fluid oz. and the recommended dose varies from 1 to 3 teaspoons once daily to 2 tablespoons twice daily which at the maximum level would

contribute about 60 mg. The juice of two good Jamaican oranges or two West Indian cherries would contain just as much Vitamin C but less sugar, which would be an advantage. In addition, a significant omission is the expiration date to indicate how long the potency of Vitamin C will be maintained.

Regarding the claims for the health benefits of this product, one may question just how a mixture essentially of sugar and Vitamin C would keep anyone in "the golden glow of good health!" What about all the other essential nutrients promoted by some of the other products discussed in this review? Jamaicans consume more Vitamin C in their normal diet than many other peoples. One would expect no effect from another 60 mg.

It is also stated that the product is "concentrated". Just what is "concentrated" is not clear. There has been a considerable loss of Vitamin C in processing which has been at least partially replaced by the added Vitamin C. Sugar is added at a relatively high concentration but this scarcely constitutes a "concentrated" preparation. Possibly a more appropriate and honest designation would be "Vitamin C and sugar added".

#### *Product D*

Next, let us look at *Product D*, a tonic which is designated as a "Fortified Tonic containing Vitamins and Iron", necessary for strength and energy. The formula is given as follows:

Per maximum daily dose	per ml.	Per maximum daily dose	per ml.
25 mcg. Vitamin B <sub>12</sub>	0.556 mcg.	3 mg. Vitamin B <sub>6</sub>	0.067 mg.
6000 I.U. Vitamin A	133 I.U.	3 mg. Riboflavin	0.067 mg.
1500 I.U. Vitamin D	33 I.U.	30 mg. Niacinamide	0.667 mg.
10 mg. Vitamin B <sub>1</sub>	0.222 mg.	495 mg. Iron and Ammonium Citrate	11 mg.

The dosage is 3 teaspoonsful to 3 tablespoonsful daily. The product is a fairly complete vitamin and iron mixture. But let us look at the composition. Presumably many people will use it at the maximum daily dose given on the label. But what real value is 25 mcg. Vitamin B<sub>12</sub> when the daily requirement is about 2 mcg.? And how many people in Jamaica are deficient in B<sub>12</sub> in the first place? And what is the value or even the desirability of 1500 I.U. Vitamin D? No one needs more than 400 and amounts in excess of this are not recommended by any authoritative body. This may be a fortified tonic but what value is this "fortification"?

In favour of the product is the fact that it contains several vitamins and iron. If the amounts of nutrients were more in line with recommended allowances the product would have merit for those who for any reason do not consume an adequate diet. The problem is, of course, that if one can't afford an adequate diet, one cannot buy this product.

#### Product E

Product E, another iron and vitamin tonic, claims to be a "high potency iron and vitamin tonic" which should be taken "every day for good health". The nutrients contained are listed as iron, thiamine, riboflavin, niacinamide, together with supplemental amounts of panthenol, pyridoxine and other B Complex factors. The nutrient content per fluid ounce is as follows:

"Iron (as ferric ammonium citrate)	100 mg. - 10 MDR
Thiamine (B <sub>1</sub> )	3 mg. - 3 MDR
Riboflavin (B <sub>2</sub> )	5 mg. - 4 MDR
Niacinamide	30 mg. - 3 MDR
Panthenol	10 mg. - **
Pyridoxine (B <sub>6</sub> )	2 mg. - **
Plus other nutritional factors as found in yeast extract."	

The product is advertised on the label as "high potency Iron and Vitamin Tonic". If it is "high-potency" (whatever that is) presumably it must be better than "low potency". Let us look at the potency - three of the B vitamins are stated as 3 MDR, i.e. 3 times the *minimum daily requirement* - (an obsolete designation from the U.S.). Assuming there is in fact

3 times what is needed daily - what does that mean? Everyone has certain requirements for those vitamins which they normally obtain from their food. Even if they do not receive any from their food (which is impossible) there is still an excess of 2 times what is needed. Are we going to work twice as fast or run twice as far if we take this product? Actually, amounts in excess of needs are excreted in the urine in the next 24 hours, and simply enrich the sewage.

This tonic is recommended for adults, with iron, thiamine, riboflavin and niacin deficiencies. There is good evidence that an important segment of the Jamaican population and that of other Caribbean countries are in fact deficient in iron and would benefit from an iron supplement. This would, therefore, be a good product to help restore people's hemoglobin and thereby make them feel better. But, on the other hand, surveys of Jamaica and other Caribbean countries have failed to turn up significant numbers of people with B vitamin deficiencies. One may question therefore the significance of the B vitamins in this product.

If it is a vitamin and iron tonic, why does it not contain *all* the important vitamins? Where are Vitamin A, Vitamin C and Vitamin D? If our diet is really deficient we may be lacking in these also, but we would have to purchase another tonic containing them or include *both* the non-fat milk and the black currant syrup in our daily diet. This becomes rather complicated and very expensive.

The label also states that the tonic contains - "other nutritional factors as found in yeast extract". What are these mysterious factors? What value are they? Why should they not be mentioned on the label? How would we in fact determine if they were there?

Let us now compare the products. It is interesting to note the claims in relation to "health":

*"Drink Product B and stay healthy"*

*"Product C helps keep him in the golden glow of good health"*

*"Take Product E every day for good health".*

Each product claims that it will ensure good health. Let us examine this critically. The non-fat milk contains Vitamin A and is low in fat. The black currant syrup contains Vitamin C and sugar, and the iron and vitamin tonic contains several B vitamins and iron. If we are deficient in iron, (and many pregnant women are), what possible value is the milk or the syrup? How will they help? On the other hand, if we lack Vitamin A or Vitamin C, which we probably don't, what good is the tonic going to do?

Now, let us examine some of the claims in the context of the law. In Section 6 - (1) of the Food and Drugs Act 1964 (Jamaica) we read:

"A person shall not label, package, treat, process, sell or advertise any food in a manner that is false, misleading or deceptive or is likely to create an erroneous impression regarding its character, value, quantity, composition, merit or safety".

It is relatively easy to determine if claims are false or misleading. Most advertisers for their own ethical reasons do not become involved in outright fraud. The problem comes in the interpretation of "likely to create an erroneous impression".

If advertisers tell you "Make your child a champion with product 'X'", what does this imply? Does it mean that this is a tasty nourishing food or does it imply something more? It may be argued of course, that everyone should know that no child can be a champion by drinking a particular drink. Then one may simply question, why should this theme be made the subject of the advertisement? It must be realized that everyone has fairly specific needs for various nutrients - vitamins and minerals, protein and energy. Once these needs are satisfied, there is no advantage in consuming additional amounts. Nutritional needs are normally met by an adequate diet. We will not regain health by consuming one or two specific factors which may or may not be lacking. It is misleading for preparations to give the impression that we will.

Now, how can this situation be remedied? It would appear that many of the claims made over radio and television for the action of these products are in contravention of the Food and Drug Act. A very simple solution would be to require that all television and radio scripts for foods, including vitamin preparations of all kinds, be subject to review and clearance by the responsible agency. This could be done either by the Ministry of Health and Environmental Control or by the Broadcasting Corporation, under the authority of the Food and Drugs Act. In this way, nothing would be broadcast which had not been scrutinized previously by government and other experts in the field.

Everyone is interested in nutrition these days, so sound nutrition information is greatly needed. Over-enthusiastic claims are confusing and misleading to the consumer who does not have the necessary information to make a proper judgement. It is the responsibility of those involved in government and the trade to see that the consumer is properly informed and not misled into purchasing products which will not give him the advertised effects. We can no longer proceed on the basis of *caveat emptor* - let the buyer beware!

CAJANAQUOTE

*"Suntory is a good drink: not so some Japanese whiskies. There is one impatient distiller who matures his product by passing electricity through the barrels. The stuff doesn't taste too bad, but I'm told that a surfeit produces a strange indifference to the world, like the after-effects of shock treatment. Siamese whisky is no better. It tastes like bad rum mixed with worse brandy, and is the only drink I know that gives you a hangover while you are actually drinking it."*

Peter Duval Smith  
The Financial Times,  
November 3, 1964.



NUTRITION ADVERTISING: A NEW DIMENSION IN  
NUTRITION EDUCATION

by

B. Andrea Okwesa

*Nutrition education in a technological age*

In an age dominated by mass communications and the electronic media, the nutrition educator has a specific role to play in creating a nutritional awareness among people at all levels of society. His policies and programmes must impinge upon those of related fields like agriculture, health, education, social welfare, youth and community development, marketing and commerce and the communications media. Wise planning and action on his part can ensure that government and public institutions become more responsive to the nation's nutritional requirements and more inclined to develop or strengthen infrastructure to deal with standards, regulations and restrictions affecting food and nutrition. His accepted role of changing personal attitudes and practices relating to food and nutrition must acquire a new dimension, one strongly influenced by the impact of mass communications on many other areas of everyday living.

*The mobilization of communication resources*

Since consciousness of proper nutrition must begin with individuals, the nutrition educator must first re-define and re-design his communications strategy and devise more meaningful and effective methods of conveying nutrition information. The mass media can play a very significant role in motivating people to change their dietary habits and spreading certain ideas relating to food and nutrition. For a long time, the food manufacturing industry has been aware that they are an essential element in the dissemination of information, and has made extensive use of them, particularly in the phenomenal growth of the processed food industry. Massive costs are invested in promotional advertising by these commercial firms and these advertisements bring about equally enormous returns in sales and profits. Nutrition on the

networks has been primarily in the hands of vested interests supported by the food industry, involved more with promoting their products than with the welfare of the client population. This bears testimony to the powerful appeal of the media in changing consumer values, tastes and eating patterns, especially in non-Western, less-industrialized countries where commercials have such tremendous authority. The nutrition educator, in his attempt to raise people's nutritional status, must be aware of the persuasive and pervasive influence of the media in shaping popular taste, and if he is to succeed in his efforts, he must make as effective use of the media as the commercial food promoter in making an impact on people's attitudes towards food and eating. The mass media is only one of a vast range of techniques at his disposal, but a very powerful technique, in the spread of nutrition information in a technological age.

*Nutrition communication vs. commercial food promotion*

Relying almost exclusively on the traditional 'tools of his trade': first-generation media such as posters, flip charts, flannel boards, blackboards, the nutrition educator may be suspicious, even contemptuous, of the cheap and glossy advertising of the food companies, their aggressive hard sell approach, and even more so, the dishonest claims, false messages and misleading implications of much food advertising. But these are all calculated to produce a particular response from the audience. The whole point of the advertisement is to encourage the consumer to go out and buy the manufacturer's product, not once, but many times, so he will spend hundreds of dollars to ensure that this will happen. There is one important fact that the nutrition educator must bear in mind when arguing the merits of food advertising. Whereas he is concerned with the assimilation of proper nutrients by the body to produce growth and development, the food manufacturer is concerned only with the amassing of bigger and better profits by selling more and more of a particular product, regardless of what its nutritional value might be. As one communicator observed, to the food manufacturer food is a source of profits while to the nutritionist it is a source of nutrients.

In some countries, particularly the United States, nutritional labeling has been instituted by law and this may be considered an attempt by the food manufacturer to meet the nutritionist half-way. Moreover, some companies even go to the length of producing "nutrition education materials" such as slide sets, wall charts and booklets on health topics, infant feeding, baby care, etc. We cannot allow ourselves to be sidetracked into believing that by so doing the food manufacturer is genuinely interested in spreading nutrition information. The name of the company may only appear in small print on the item, but the materials will be distributed in large numbers to members of the health and medical professions who, in return for their seal of approval, may receive samples of the manufacturer's products and equipment, even, in some cases, fellowships and grants for further study. True, the amount of money invested in this form of advertising may be a drop in the ocean when compared to the sums allocated for radio and T.V. advertisements, but it is advertising nonetheless.

As far as advertising via the broadcasting media is concerned, the effectiveness of commercial food advertising has depended in large measure upon the virtual absence of counter-propaganda. In the market of radio and T.V. advertising they have had no competition so the reliability and integrity of their claims have more often than not gone unquestioned. The nutrition educator and the food manufacturer, though poles apart in their policies and philosophies, must now meet on equal ground. If the advertiser can "sell" his products via the mass media, the nutrition educator can equally "sell" good nutrition and create a demand for more wholesome foods. He must make the public aware of the nutritional problems inherent in the society - the lack of proteins, calories and other essential nutrients in the diet, causing malnutrition and related illnesses; the early cessation of breast-feeding in preference to artificial feeds which most mothers can neither afford, properly prepare nor store; the reliance on expensive imported and/or processed foodstuffs in favour of locally-grown and seasonal products - these are only a few of the problems he can locate, identify and solve through the effective outreach of a mass-media advertising campaign. Nutrition advertising on the networks will help counteract the commercial propaganda which promotes the spread of poor nutritional habits.

The nutrition educator, therefore, has an increasing obligation to intervene in this area of food supply and demand, to change attitudes and practices and also influence government institutions to become more aware of nutritional issues. While the commercial foods continue to be promoted via the media, there should be other messages stressing the costs and nutrient values of local foods; the importance of certain nutrients in the diet; breast-feeding vs. bottle feeding; and home-made infant weaning mixtures, among other important food and nutrition issues.

In a society like ours, the people most in need of a change in their eating habits and who often lack even the most rudimentary knowledge about foods, are the same people with little chance of being reached by the printed word. With no source on which to depend for their nutritional knowledge, their problems compounded by poverty, ignorance and a lack of stamina due to insufficient intakes of proper nutrients, they fall an easy prey to disease and illnesses due to poor nutrition. The media most capable of reaching the 'at risk' masses most effectively and in the shortest possible time is still radio, and it can be a powerful instrument in changing mentality and set patterns of behaviour. Existing public service broadcasts on food and nutrition play a very significant part in fostering good nutrition, but largely among a small, comparatively literate and already committed audience. Recipes, panel discussions and interviews on food and nutrition topics are only preaching to the converted who may be interested enough to tune in to particular programmes. These are not the people most urgently in need of nutrition education, so much wider coverage of the food situation is necessary: not only a series of select long programmes but also, and more important, short messages of optimum nutritional and informational impact inserted into popular programmes at peak hours.

#### *The mechanics of implementation*

Nutritional priorities should be determined by a corps of nutrition educators drawn from different institutions and disciplines. Appropriate messages would be formulated and translated into 'media language' by skilled communicators who would devise the various forms the messages would take.

An integrated media approach could enable the same message to be transmitted on different media, for example, a visual element (cartoon figure) could be added to the radio "spot" for T.V. purposes, and the same graphics on T.V. could recur in comic strips, posters, calendars, booklets and the newspapers. Coordination among the different media would produce more uniformity and cohesiveness which would, in turn, help to reinforce the ideas expressed in the message.

These "nutrition messages" could take various forms - they could be a jingle or song in reggae/mento/calypso rhythm, depending on current and local taste in music, or a single statement re-iterated (with appropriate sound effects) throughout the day, using the voices of popular local personalities and, preferably, local vernacular. The same voices on radio could be heard on T.V. and the same jingles or slogan broadcast on both media, also the words printed in the newspapers. The airwaves are already flooded with advertisements in varying degrees of sophistication so there would have to be a serious attempt to produce superior advertising "spots" which would command instant attention not only through content, but also style of presentation. Food and nutrition advertisements would have to be carefully and clearly designed to serve a specific objective, be honest and highly reliable in their claims, and also take into account local and traditional customs, beliefs and attitudes concerning food and eating, as well as the psychology of the audience. Above all, they should be couched in terms that the audience will instantly understand and empathise with, conveying their information in a simple, light and humorous vein. In this way "message fatigue" would be avoided: the message would be short and snappy thereby enabling more information to be retained by the listener than would be the case were the same information embodied in a longer, more intellectual programme. These short advertisements also, would not require a high level of intelligence to be understood, and their entertainment content would ensure their continued popularity. The style and form of the message relayed by this technique could vary from week to week to sustain audience interest, or different aspects of the same message could be highlighted at different times of the day. High dramatic impact could be provided by using two voices instead of one, for example, two women discussing the value of

breast-feeding in helping a woman regain her figure. There is an endless range of possibilities in the use of this type of broadcast.

#### *Financial implications*

At this point, the most logical question to ask would be 'who pays?' Apart from funding by foreign financing agents of specific mass-communication projects, there is an obvious need for national financing of food and nutrition campaigns, and for the use of the media to be built into the structure of such campaigns. The existing limited reach of government broadcasts on food and nutrition would be increased by a wider coverage via the media which would ensure greater recognition of food and nutrition priorities on the part of the policy-making bodies. If a Food and Nutrition Policy should become an integral part of the National Development Plan, government legislation could secure a block of airtime on radio and T.V. which would be permanently allocated to food and nutrition broadcasts. Representatives from related government bodies (viz. Health and Environmental Control, Agriculture, Youth and Community Development) as well as nutritionists and health officers from various organizations could form a Nutrition Broadcasting Advisory Council, whose responsibility would be to establish food and nutrition priorities and allocate airtime to broadcasts on such topics, making appropriate recommendations to the broadcasting media for free access to the airwaves at peak periods in-between popular programmes.

#### *Conclusion*

A positive result of having food and nutrition messages relayed on the networks would be the rise in social standing of policies related to food and nutrition, and their wider acceptability among members of the public. Once the future of food and nutrition issues on the national airwaves is secured, we could look forward to an era of increased knowledge and awareness of good nutrition, of public interest and action in areas of prime nutritional concern, particularly young child feeding, and of improved local production and distribution of foodstuffs. Food and nutrition would gain the status and

prominence they deserve in society, and an improvement in the quality of life for all people would ensue, since good health, through better nutrition, is a vital pre-requisite of human achievement.

#### NEWSPRINT AS FEED

*Someone once said yesterday's newspaper was only good to wrap fish in...but agricultural researchers are tapping still another use of old newsprint.*

*Waste wood products, such as newspapers, have become the subject of investigations to discover their potential as energy sources for ruminant animals.*

*In a feasibility study, conducted by scientists at Beltsville, Maryland, steers were fed various percentage rations of newsprint mixed with molasses, ground timothy hay, soybean meal, cracked corn, trace mineral salt, and dicalcium phosphate. The researchers hoped to learn whether this ration could replace part of the hay in a ration for steers.*

*They concluded, after evaluating the animals and their weight gains, that newsprint could comprise 8 percent of the coarse substance in the ration. In other words, the animals could digest cellulose of woody tissue and utilize it as if it were cellulose from forage."*

THE CHOLESTEROL DILEMMA  
(Some Thoughts on Diet and Heart Disease)

by

Courtney F. Bartholomew\*

When we speak of cholesterol nowadays we automatically associate it with the heart and diseases thereof. The housewife, in her purchase of butter or lard, demonstrates a clear understanding of what she means by fat. Biochemists, on the other hand, in an effort to be more precise, use the word lipid which covers all the chemical substances in the housewife's fat - triglycerides which are esters of glycerol and fatty acids, phospholipids, sterols, etc. Cholesterol is a sterol and is found in all animal tissues, and so some cholesterol is found in all foods of animal origin. It is absent from food of plant origin. It is not, however, an essential nutrient since all mammals are capable of synthesising it. A normal diet contains from 0.3 to 1.0 gm. a day but endogenous production is 2-5 times as much. Egg yolk provides the richest supply of dietary cholesterol - two eggs a day produce about 0.6 gm.

The association of atherosclerosis and ischaemic heart disease is well-known and severe atherosclerosis appears to be associated with a dietary pattern characterized by high intake of calories, total fat, saturated fat and cholesterol. The major determinant of the mean blood cholesterol level in any community is diet and is related to the quantity and proportion of the total calories supplied by saturated and polyunsaturated fats. In man the blood cholesterol level can now be predictably altered by changes in the

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amount and kinds of fatty acids in the diet. Saturated fatty acids raise the blood cholesterol level; polyunsaturated fatty acids have an opposite effect. The serum cholesterol is, however, less affected by the actual cholesterol content of the diet.

### *The Lipid Factor*

Multiple interrelated factors, both genetic and environmental, have been shown to play a role in the evolution of coronary artery disease in various general population samples. Of all the identified factors associated with increased susceptibility to heart attacks the blood lipids are among the strongest. Since the discovery over a century ago that cholesterol was a prominent constituent of the atheromatous plaque and that the same substance was also present in the blood, a considerable amount of research has been directed towards obtaining a better understanding of the precise nature of the relationship of cholesterol to atheroma. Populations with a high average level of serum cholesterol tend to have a high reported mortality from cholesterol-related disorders. Lower death rates and less extensive atheromatous changes in populations have been reported from areas where substantially lower cholesterol levels are found. That this is not simply a racial difference has been demonstrated in migrants of the same race from a low to a high cholesterol area who appear to correspondingly change their cholesterol levels thereby precipitating coronary heart disease. Prospective data concerning the risk of coronary heart disease in relation to lipids other than cholesterol, for example lipoproteins, are quite scarce. In men, however, knowledge of both serum lipoproteins levels and the cholesterol concentration appears to provide no better discrimination of potential coronary victims than can be deduced from an accurate serum cholesterol value alone. Any one of the lipids or lipoproteins can be used effectively for assessing vulnerability to coronary heart disease. None, however, would appear superior to the more convenient serum cholesterol for determination of the purpose.

The question of what is a normal serum cholesterol level is fraught with confusion. We know that the serum cholesterol concentration of normal subjects can be significantly influenced by the amount of fat and cholesterol in the diet. Because dietary habits vary so much, however, it is not possible to determine the upper limits of normal by screening the population, finding the mean value and setting upper limits.

#### *Physical Activity*

It appears that physical activity tends to lower serum cholesterol and observations of low serum cholesterol and other blood lipids have been made in active Eskimo hunters and other physically active population groups such as the bushmen and the Masai Tribe in East Africa in spite of their quite different and even rich cholesterol diets. The Masai Tribe are almost free of coronary artery disease, but they are physically active and very fit as judged by measurements of their maximum oxygen uptake which compare favourably with those of Olympic athletes. The Tarahumara Indians who live high in the Sierra Madre mountains of Northern Mexico have become famous because of their kick-ball game in which they run 100-150 miles without stopping at altitudes as high as 7000 feet above sea level. These Indians have an essentially vegetarian diet deriving most of their calories from corn oil and pinto beans. Preliminary studies of these Indians have indicated a serum cholesterol of 79-187 mgs.% in adult men and women aged between 17 and 69. Besides, they appear to be free from coronary disease and hypertension, very much like the Masai. The range therefore of 170-200 mg.% probably represents the biological upper limits of normal for serum cholesterol. The Framington Study in the U.S.A. has definitely shown that the risk of coronary disease arises progressively as the serum cholesterol concentration rises above 200 mg.%. As a rule of thumb, the study has shown that the American man 50 years or over with a serum cholesterol of 265 mg.% or above has 4 times the risk of developing coronary disease as the same individual with a cholesterol of 200 mg.% or below.

### *The Fatty Acids*

Of the three cholesterol-increasing fatty acids, *lauric acid* is an important constituent of coconut oil, *myristic acid* occurs in considerable amounts in butter fat and also in coconut oil. *Palmitic acid* is the main problem: it is present in all animal fats and in some vegetable oils. On the other hand, polyunsaturated fatty acids are major constituents of many vegetable oils, soft margarine and poultry fat. Cholesterol is present in notable amounts in brain, egg yolk, liver, kidney, oysters and butter. In most diets, however, eggs and butter are the major sources of dietary cholesterol. With such simple information, anybody can start planning a cholesterol-lowering diet. Butter, for example, should be replaced by a soft margarine. Ice cream, cheese and pastry should be avoided. Whole milk should be replaced by skimmed milk as skimmed milk contains only about half as many calories as whole milk, and is virtually fat-free. In Western diets 35-40% of the total calories is derived from fat, and with a little imagination in the kitchen this can easily be reduced to approximately 30%.

### *Sugar, Vitamin C and Yogurt*

Whereas dietary fats affect the serum cholesterol, dietary carbohydrates influence the serum triglycerides. Such observations have stimulated much discussions on the role of sugars, particularly of sucrose, as a potential suspect in atheroma and coronary heart disease. Attempts to show that individuals who have suffered from myocardial infarction had consumed larger quantities of sugar than controls have met with mixed success. Yudkin and Roddy in 1964 reported large intakes in a group of patients in London but others have failed to confirm their findings. Ascorbic acid is also involved in cholesterol metabolism and appears to have a lowering effect on the serum cholesterol; hence ample intakes of green vegetables, citrus fruits and other sources of Vitamin C is advisable at all times. Interestingly, scientists at Vanderbilt University in Nashville, Tennessee are experimenting with yogurt in the diet to see if it will actually reduce cholesterol levels in humans, - an idea prompted by the dietary and health patterns of the now famous Masai Tribe in East Africa. Researchers in heart

disease have long wondered how these tribesmen who consume large amounts of cholesterol in their diet have one of the world's lowest heart attack rates. A Masai eats about a gallon of homemade yogurt a day which contains about twice the amount of daily dietary cholesterol recommended by the American Heart Association, yet his blood cholesterol level is about half that of the average American male. In some of the tribesmen Doctor George Mann of the University found that the more yogurt they consumed the lower their cholesterol dropped. He has now had similar results with adult Americans who have been fed about two quarts of homemade yogurt daily. The doctor theorizes that the bacteria in the yogurt produce a fatty acid which acts on the liver and interferes with normal cholesterol production. The active agent has not yet been isolated and, in any case, this work must await verification.

### *Eggs*

The high cholesterol content of eggs has resulted in much heated controversy which could threaten the egg industry. Some extremists are so adamant in their anti-egg campaign that they would put the hen on the contraceptive pill! Two powerful factions are fighting over what Americans should be told about eggs and cholesterol: The American Heart Association and the Egg Industry. Dr. Jean Mayer of Harvard, a well-known nutritionist, refers to the egg industry as "the heart disease Mafia". He does agree, however, that eggs are an excellent food and a valuable part of the diet of children and young women, but he stresses emphatically that the amount of cholesterol in egg yolk (a single egg yolk contains 5/6 or more of the generally advised upper limit per day) makes it distinctly unwise for those at risk to eat more than two or three eggs in a week. For practising clinicians that leaves the question "Should restricted egg diets be prescribed for high risk patients only, that is, middle aged men with high serum cholesterol levels?" Some manufacturers in the meantime have produced a so-called cholesterol-free egg-substitute containing 99% egg whites with protein, fat, vitamins and minerals added to replace the cholesterol-rich yolk, thereby aiming to win the hearts and pockets of both the coronary-prone and anyone else worried about cholesterol.

There are those, of course, who believe that the atheromatous process begins in early life, and there may be some truth in this; one should, therefore, advise healthy dietary habits in the home in the early days of life. Indeed, if the association of diet and coronary heart disease is considered to be causal, then national health policy should aim at a nationwide correction of the diet notwithstanding the powerful economic interests that are involved. But while this conflict is being resolved the doctor still has to deal with his individual patients and can easily assess the probable risk of his patients, based on the commonly accepted risk factors of coronary artery disease, viz, high levels of blood pressure, cigarette smoking and serum cholesterol. If these are found to be present, their energetic preventive measures should certainly be undertaken. Such measures appear to be most rewarding when they are put into effect before the disease process has had time to advance. As the Chinese saying goes:

*"The mediocre doctor treats imminent illnesses, the good doctor cures actual ailments, the superior doctor prevents illnesses".*

#### *Moderation in all things*

Recent epidemiological work supports the advice given by many physicians of "moderation in all things, take regular daily exercise outdoors, stop smoking or smoke only a few cigarettes, plan a daily routine that causes no undue stresses and avoid dietary excesses especially of animal fat and simple sugar". This advice does not involve material changes in traditional food habits or traditional diets. In simple language, such a person should be advised to limit his intake of sugar, butter and cream. Fried food should be a luxury rather than a regular feature of the diet unless a vegetable oil like corn oil is used. Bacon and eggs for breakfast should not be taken traditionally and regularly. He should choose lean portions of bacon, ham, beef or mutton with all the excess fat removed. The dietary regime involves the strict limitations of the intake of fats of animal origin containing a high proportion of saturated fatty acids and a partial substitution by vegetable oils rich in unsaturated fatty acids and so ensuring a low cholesterol blood level.

In 1968 a Scandinavian Committee reviewed evidence relating to diet and ischemic heart disease in Scandinavian countries where between 40 and 60% of the dietary energy is provided by fat and sugar. A report was prepared for widespread circulation from which the following is an extract:

"The supply of calories in the diet should in many cases be reduced to prevent over-weight. The use of saturated fat should be reduced and the consumption of polyunsaturated fat be increased simultaneously. The consumption of sugar and products containing sugar should be reduced. The consumption of vegetables, fruits, potatoes, skim milk, fish, lean meat and cereal products should be increased. From the medical and nutritional stand point, the importance of taking regular exercise from an early age for those who have mainly sedentary occupations should also be emphasised. To carry out the above programme will require the cooperation not only of doctors but of all those who give instructions or answer questions on nutrition or who are responsible for catering on a large scale, particularly in schools, hospitals and similar institutions and other eating places".

The advice of the Scandinavians appears sensible and a change of national diet along the lines which they suggest would have no adverse effect on health and might be beneficial in many ways including a reduced incidence of coronary artery disease.

#### *Research*

In Trinidad the pertinence of this paper lies in the fact that we have observed a very high incidence of coronary heart disease in our peoples. It appears to us most certain that the East Indian population is more at risk than other ethnic groups. A well controlled research project is being planned to determine the factors which make this disease prevalent here as opposed to the low incidence, say in Barbados. It promises to be a study which may well

lead to or confirm certain important clues as to the pathogenesis of this disease. There are many questions to be answered, among them - "Is it that East Indians use more coconut oil containing saturated fatty acids thereby increasing their blood cholesterol levels?" "Is it that they use more sucrose (from sugar cane) in their diet?" This we will not know until the research survey is completed. In the meantime it will serve us well to remember as we ponder over *The Cholesterol Dilemma* that the heart of the nation is at stake.

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#### FAT TRAPS

Although many people think of fats only as high-calorie "traps" or as aids to help with cooking, their importance in our diet was established many years ago. Not only do they make diets more palatable and satisfying, but they carry with them the fat soluble vitamins (A, D, E and K) so important in human nutrition.

The most common of the food fats are known as triglycerides or neutral fats. They are present in foods of both animal and vegetable origin and are made up of glycerol plus three fatty acids. In animal fats, these fatty acids are more saturated than are those of vegetable fats, and the more saturated they are the higher their melting point. When a fat is liquid at room temperature, it is called an oil.

Fortunately, the unsaturated vegetable oils (except coconut oil) are also good sources of vitamin E.

Margarines nowadays are mostly made from vegetable oils by the process of hydrogenation. This does not completely saturate these fats, but gives certain desired physical properties.

R.S. Alfin-Slater and D.B. Jelliffe

Los Angeles Times Home magazine  
January 5, 1975

## THE NUTRIENT-COST CONCEPT IN CARIBBEAN FOOD ECONOMICS\*

by

C.E. McIntosh\*\*

*Introduction*

The use of the nutrient-cost approach to pricing foodstuffs in the Caribbean began with the Caribbean Food and Nutrition Institute in 1968. At that time McKigney<sup>1</sup> estimated at the retail level the cost of 20 grams of protein and 1000 calories obtainable from various foodstuffs. Since its introduction to the Region many other researchers have utilized this concept in price comparisons.<sup>2</sup> The origin of this concept could be traced as far back as November 1913 when in a lecture to the New York Academy of Medicine, Graham Lusk commented on "Criteria of the Monetary Values of Foods". The market price in cents of 1000 calories in various staple foods he referred to as 'the cost of nutritive values'.<sup>3</sup> Lusk noted that where income is sufficient as not to constrain the expenditure on food, the concept is of no practical significance, but the concept was of the greatest economic importance among the poor, the class who receives scientific knowledge last.<sup>4</sup>

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\*\*From Discussion Paper No. 2 for Workshop on Food Economics and Food and Nutrition Policy organized by the Caribbean Food and Nutrition Institute, held in Jamaica, 6-18 July 1975.

<sup>1</sup>McKigney, J.I. (1968) *J. trop. Ped.*, 14.

<sup>2</sup>Foster, I. (1973) *Cajanus*, Vol. 6, No. 1; Gurney, M. and Cook, R. (1973) *Cajanus*, Vol. 6, No. 1; Ashworth, Ann et al (1974) *Cajanus*, Vol. 7, No. 1.

<sup>3</sup>*Nutrition Reviews*, Vol. 31, No. 7 (July 1973) pages 211-215.

<sup>4</sup>*Ibid*, pages 213-214



The thesis of this paper is that this concept is of especial economic significance in the Region, but there are a number of technical problems that must be clarified to make the concept relevant in this economic environment. These problems hinge on the point of the production-consumption sequence to which the concept is applied and the features of the markets for food, including government price control policies and subsidy programmes.

#### *The Concept and its Applications*

The nutrient-cost concept applied at the retail market level converts food prices as expressed on a quantity basis to reflect the cost of its nutrient components. In a table it shows the relative amounts of nutrients that are obtainable for a given expenditure on each food item or, alternatively, the relative costs of given quantities of nutrients obtainable from various food sources. These comparisons are of significance because of the variability in nutrient composition and market prices of various foodstuffs.

Given the assumptions of the free play of market prices and that consumers buy all their food on the open market, the relative cost of nutrients could be ascertained. The information could then be used in a number of ways:

- (1) The planning of menus by dietitians in food service institutions - hospitals, schools, prisons - could be facilitated by a knowledge of the relative costs of the various nutrients. In the home, the housewife could find the information invaluable in allocating a limited budget, while ensuring for herself and family an adequate level of nutrition.
- (2) The nutrition educator and dietary counsellor would find the information useful in demonstrating which foods give the best level of nutrition for a given monetary outlay.

- (3) Government personnel responsible for the importation of foods could use the data in assessing the relative nutritive values of the imports in relation to expenditures and in applying taxes on foods and the fixing of appropriate import duties. Where negative lists are considered, those responsible for this exercise could use the information as a criterion for determining which products should be excluded.
- (4) Those responsible for price controls could use the information as one criterion for determining the price levels.
- (5) Agricultural planners could also use the information in establishing which enterprises should receive priority in agricultural programmes. On purely nutritional grounds those enterprises which give high nutritive value relative to production and distribution cost should be encouraged. However, these enterprises are not necessarily those which would bring a high monetary return to farmers and the welfare of the farmer nutrition-wise must be taken into account.
- (6) Marketing agency personnel could make use of the information in establishing minimum guaranteed prices for various food products so as to encourage the production of highly nutritive products.
- (7) Over a period of time the effects of relative price changes on the ability of people to satisfy their nutritional needs could be monitored through nutrient-cost tables.

*Nutrient-Cost to Different Consumers and to the Nation*

It is customary to utilize an average retail price to compute the nutrient-costs for comparison. It is possible that no one ever pays this average price. Nutrient-costs vary according to the variability in market prices or other relevant cost since in the Caribbean a fair amount of production is consumed without going through the marketing demands.

Differences in nutrient-costs to different consumers and to the nation could be demonstrated with data on the cost of calories from selected food sources in St. Lucia for February, 1974.<sup>1</sup> The cereals and grain legumes (except pigeon peas) were practically all imported (89-100 percent), while the starchy fruits, roots and tubers, of which 64 percent or less passed through the marketing channels, were locally produced. (Table 1). This means that for this latter group of foodstuffs 36 percent or more indicates the degree of subsistence agriculture practised and the importance of these foods in the nutrition of these low-income families. Further, nutrient content per dollar is highest among subsistence producers.

In computing the nutrient-cost in terms of calories per cent (money) to the nation, each calorie derived from the imported cereals and grain legumes must be multiplied by the market price whereas only a small proportion of the starchy fruits, roots and tubers cost the nation the prevailing market price. As such, the nutrient-cost values based solely on the market price lead to an unfair comparison between the imported cereals and grain legumes and the locally produced starchy fruits, roots and tubers, and grain legumes.

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<sup>1</sup>CFNI data obtained from a Food and Nutrition Survey, St. Lucia, February, 1974.

**Table 1: Consumption, Purchases, Costs and Adjusted Nutrient-Cost Values for Selected Foods in St. Lucia : February, 1974**

	A	B	C	D	E	F	G	H
	Quantity Consumed (lbs.)	Quantity Purchased (lbs.)	B as % A	Price per lb. as Purchased (cents)	Nutrient-Cost based on D (cents)	Estimated Production Cost (cent/lb.)	Composite Price (cents)	Adjusted Nutrient Cost Values* (Cal./cent)
<u>Cereals</u>								
Parboiled Rice	405	399	99	32	52	-	-	52
Cormeal	49	48	98	37	44	-	-	44
Wheat Flour	613	576	97	42	38	-	-	38
Bread	737	735	100	80	15	-	-	15
<u>Starchy Fruits, Roots, etc.</u>								
Green Bananas	1,365	316	23	11	28	5	6	48*
Tannia	223	38	17	22	21	10	12	39*
Breadfruit	292	66	23	16	15	5	8	33*
Dasheen	1,293	396	31	25	15	10	15	26*
Sweet Potatoes	217	139	64	29	15	15	21	21*
Plantains (ripe)	221	109	49	25	15	15	20	19*
<u>Grain Legumes</u>								
Dried Pigeon Peas	64	23	36	72	21	46	55	28*
Red Peas	40	38	95	92	16	40	-	16
Split Peas	15	15	100	96	16	-	-	16
Black Eye Peas	9	8	89	95	16	46	-	16
Lentils	25	25	100	101	15	-	-	15

A true cost comparison could be made by the use of a composite price based on the market price for the proportion of the foodstuff purchased and the estimated cost of production for that portion which did not go through the market. Thus:

$$\text{Composite Price} = (\% \text{ Purchased} \times \text{Market Price} + \% \text{ Produced} \\ \times \text{Cost of Production}) \div 100$$

The interesting feature of the modified nutrient-cost value is that the total number of calories per dollar from the starchy fruits, roots and tubers and pigeon peas increased substantially vis-à-vis the imported cereals and legumes, and in particular green bananas now stand as the second cheapest source of calories in the selected group from its fourth place previously. More recent data (January and April 1975) place green bananas as the second cheapest and cheapest source of calories respectively for the same group of foodstuffs based on the retail market price.<sup>1</sup> When a similar adjustment is made, the potential of green bananas as a source of calories for the nation is highlighted.

Although green bananas were a cheap source of calories, consumption was low relative to wheat flour and rice. (In terms of edible portion containing approximately 12% moisture, the quantity of green bananas consumed was 232 compared to 405 pounds of rice, 613 pounds of wheat flour and 604 pounds of bread consisting essentially of wheat flour). A serious constraint in the distribution and consumption of green bananas is its high water content. Such a limitation could be overcome by appropriate processing. Processing coupled with improved marketing could make bananas competitive in terms of its contribution to total caloric intake for St. Lucians.

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\*CFNI "Nutrient-Cost Tables for St. Lucia, January, April, 1975".

*Production, Preparation for Consumption and Nutrient-Cost Comparisons*

In the last section reference was made to the cost of production of locally produced foodstuffs and its implication for nutrient-cost comparison in a mixed subsistence/market economy. The cost of production combines cost in dollar terms with yield in physical terms. A more important concept is one which combines money cost with nutrient yield. Just as foods vary in their nutrient composition, the production units (plants or animals) from which they are derived have varying yield capabilities on a per acre per annum basis. (Table 2). Nutrient-cost values at the production level facilitate meaningful comparisons among competing alternatives when nutrition-oriented production decisions are considered. These values also serve to highlight the comparative advantage potentials of certain areas over others in food production at low cost. However, costing the yield per acre per annum of certain locally produced foodstuffs poses a problem in the Region because of the mixed system of cultivation practised.

**Table 2:** Yields per acre per year in tons in total energy and in protein of various crops and rotations, using Jamaican data.

Crop	Yield (tons)	Energy yield (Kcal X 10 <sup>6</sup> )	Protein yield (metric tons)	% of energy yield from protein
Red pea )	0.4	1.2	0.08	22.1
Corn )	1.5	5.0	0.13	
Soyabean )	0.8	2.3	0.26	
		8.5	0.47	
Corn )	1.5	5.0	0.13	14.7
Cowpeas )	0.5	1.5	0.11	
		6.5	0.24	
Corn )	1.5	5.0	0.13	13.1
Peanuts )		2.0	0.10	
		7.0	0.23	
Rice	2.4	7.8	0.16	8.0
Yam	6.0	4.9	0.11	9.1
Sweet Potato	4.0	3.5	0.04	4.5
Banana	5.3	2.7	0.03	4.7

Source: Gurney, J.M. (1975) "Staple Foods for the Caribbean", *Cajanus*, Vol. 8, No. 1, page 3.

Foodstuffs as purchased are in various stages of preparation - some are ready to eat (ripe bananas, sugar, peanuts, bread), others must undergo cooking before becoming edible (green bananas, rice), and still others must undergo certain processes such as mixing with other foodstuffs, then cooked before eating (wheat flour). The method of preparation for consumption has a direct bearing on the nutrient-cost. Here again, there is need for adjustments to be made at least between those foods that are directly consumable at purchase and those which must undergo some degree of cooking. A problem with making the adjustment is that different cooking procedures utilize different energy levels but an appropriate energy cost for cooking should be added to these foods which are to be cooked, as well as the labour cost involved in the preparation.

#### *Subsidies, Duties and Taxes*

Price controls have been applied to various foodstuffs, especially those that are imported. Sometimes the price controls are applied with a subsidy. When a subsidy is involved there is a hidden cost which does not enter into the computing of the nutrient-cost to the nation and again leads to unfair comparison between an unsubsidised product and a subsidised product. For the food purchaser (consumer) this does not matter, but the planners and policy makers must be aware that in making a fair comparison the cost of the subsidy should be added to the retail price to derive the nutrient-cost of the product in question.

Import duties are applied by the State on certain imported food items. These charges are passed on to the consumers. The level of the charges (which vary depending on the source of the product) bear a direct relationship to the final price of the food item. Nutrient-cost based on the c.i.f. (cost, insurance and freight) price or the retail price less these charges would be more appropriate for personnel controlling imports. A similar situation holds for taxes.

### Conclusion

This paper has attempted to show that the nutrient-cost approach to food price comparison could be an invaluable tool in decision-making bearing on formulation of menus, dietary counselling, importation and agricultural production and marketing programmes. In order to make fair comparisons among foodstuffs, attention must be paid to the subsistence factor (production for consumption factor) in arriving at the nutritional cost, the state of preparation of the foods, and the extent of subsidies, duties and taxes among competing commodities.

### CAJANAQUOTE

*"A proportionately unequal distribution of food within a household may not be the main problem in a given country. In too many cases the available food supply is simply inadequate.*

*Nevertheless, the nutritional deficit may be aggravated in many parts of the world by a food distribution system at household level whereby some household members do not receive any or enough of the available foods such as meat, fish, vegetables and/or fruits, but only a staple. This unequal distribution may have far-reaching consequences, especially for the vulnerable groups."*

A.P. den Hartog

*"Unequal distribution of food  
within the household"*

FAO Nutrition Newsletter  
(October-December 1972) p. 8-15



## FOODS IN PREHISTORY: NUTRITIONAL LESSONS FOR THE PRESENT

by

*John R.K. Robson\**

One of the obvious conclusions that can be made with respect to the diet of prehistoric man is that it cannot have been too bad or man would not have survived. We tend to assume that over the years our diet has improved and that we are presently enjoying a period of life when (for the affluent at least) food is abundant, palatable, hygienic, and adequately nutritious. On the other hand we are increasingly recognizing our inability to meet the food needs of the burgeoning world population as well as expressing concern over the high prevalence of nutrition-related health problems such as obesity, diabetes, and cardiovascular and gastro-intestinal diseases. Efforts to overcome these problems have ignored the lessons that might have been learned from the past relating to our food supplies and food habits, and their effect on our health.

The Human Nutrition Programme at the University of Michigan in collaboration with archeologists, anthropologists, and ethnobotanists has been examining the history of man's resources and food habits. Although research relating to life 5000 years ago has many problems, we are confident that the inhabitants of the Lower Illinois Valley at that time consumed seeds, nuts, berries, and roots from hundreds of plant species, many of which are still growing in the area. Supporting evidence of man's prehistoric diet is provided by contemporary aborigines in Australia, Africa, and Asia who follow a way of life very similar to that of Stone Age man. Australian aborigines and the recently discovered Tasaday in the Philippines consume a tremendous variety of different foods including grass seeds, nuts, leaves, berries, shoots, fruits, flowers, barks, roots, bulbs, tubers, saps, resins, insects, rodents, reptiles, game animals, eggs, and fish.

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\*Reproduced from *League for International Food Education Newsletter*, August 1975). Dr. Robson is the Director, Human Nutrition Programme, School of Public Health, University of Michigan, Ann Arbor, Michigan 48104, U.S.A.

We recognize that aboriginal populations experience high morbidity and mortality from accidents, infections, and parasites; yet there is no denying that most of them have magnificent physiques and that obesity does not present an obvious problem. Even though we lack detailed knowledge of the nutritional and health status of primitive man, it is apparent that his mode of life runs the risk of periodic food shortages and sometimes famine. Nevertheless, as a hunter/gatherer he does not conform to the popular image of a miserable, half-starved creature continually struggling for nutritional survival.

In terms of variety in his diet, historically man achieved the pinnacle of success when he was a hunter/gatherer. As soon as he started to domesticate wild plant sources, he began to limit his dietary choices. This fact is important nutritionally. As he became more and more dependent on cultivation, man's opportunities for utilizing other food resources diminished. In those areas where the industrial society replaced the agricultural society, a majority of the population became dependent on the minority who practice intensive farming. As a result we in the Western world are now dependent largely on foods from a relatively small number of plant staples, such as cereal grains and legumes. Many of our foodstuffs are processed in such a way that they differ considerably from those of fifty years ago. In many cases nutrients lost in processing have been replaced, but other constituents like dietary fiber have not. We now believe that this food component may be important in the regulation of carbohydrate and fat metabolism as well as digestive functions.

The changes in Western man's dietary habits as he progressed from being a hunter/gatherer through subsistence agriculture to dependence on intensive farming can be related to different kinds of nutritional disease. In the life cycle of man weaning is a particularly vulnerable time. Breast milk, a perfect food for the infant during the first six months of life, must be supplemented and ultimately replaced by a solid diet that provides not only sufficient energy, but also protein of adequate quality. If there is not enough animal protein, dietary sufficiency can best be obtained when variety of foods are consumed. Whereas the baby of an Australian aborigine

is weaned on honey, turtle eggs, fish, meat, fruits, and vegetables, the baby of a subsistence farmer in a developing country must try to survive on cereal and starchy gruels. With such dietary limitations one would expect protein energy deficiency, particularly kwashiorkor, to appear and this is precisely what has been observed in groups who do not have suitable weaning foods.

With the spread of technology the practice of breast-feeding has diminished and the use of cow's milk in nutritionally adequate infant formulas as a substitute for human milk has increased. Frequently, however, lack of money or unhygienic habits adversely affect the quantity and quality of the formula given. The result is often marasmus, another protein energy deficiency disease.

The changes in diet habits have other implications. For example, dependence on intensive farming has increased the demand for fertilizer, mechanical cultivation and other energy-consuming aids. One must acknowledge that progress is inevitable and that it is impossible for man to revert to being a hunter/gatherer. Nevertheless, we may be able to relieve the food situation in the future by examining some of the food resources presently ignored by the Western world. Some seeds are very good sources of protein and energy. Other seeds contain starch and could, therefore, be classified as cereals, similar to wheat and corn. These cereal-like seeds missed being selected for domestication by primitive man; but modern man, having accumulated a vast knowledge of plant genetics and selection, could apply his knowledge to the selection and breeding of these cereal seeds as well as to other varieties of indigenous (or wild) plants. Most indigenous plants are hardy and adaptable, so much so that they are frequently called weeds, e.g. pigweed, lambs quarter, and goose foot. They grow rapidly and well and their palatability is known since they are eaten in many parts of the world. We believe that the application of agricultural expertise and technology to problems of cultivation and harvesting of these wild plants could utilize a neglected but important food resource. Prehistoric man survived because of them; perhaps modern man may, too.

## NEWSPAPER CLIPPINGS

*AGRICULTURAL WARNING MUST BE HEEDED*  
*From the Advocate-News, Barbados, 22 May 1975*

The Barbadian public did not need the report of the Caribbean Development Bank for 1974, made public on Tuesday, to tell them that 1974 was a difficult year. Higher prices, increased taxes, shortages, rising unemployment all surfaced last year and directly affected the entire community.

What the general public could not be expected to know and which the report spelled out was the degree to which the area had been affected. The report showed that consumer prices rose faster in 1974, than in 1973 and in all the countries rates of inflation ranged from 20 per cent to 38 per cent.

The world inflationary crisis, the world energy crisis and the world food crisis - simultaneously and interacting - raised fears of the threat of the most serious recession since World War II and the least developed countries were predictably hardest hit, and in fact the very existence of their economies was threatened.

Various other ramifications of the unsatisfactory economic situation in the region including high interest rates, the slow-down in tourism, construction and agricultural exports with the exception of sugar were itemised in the report, and a ray of hope shed over the gloomy picture. The Caribbean Development Bank's President, Mr. William Demas, concludes that there has been one redeeming feature of the economic trauma experienced by the countries of the Caribbean region, in 1974 - *all the countries now clearly perceive the vital necessity of doing all they can to increase food production by both national and regional action.*

Ironically, at the same time that the findings of the CDB's report appeared in this newspaper an account of reasons for a white potato shortage was published. It revealed another chapter in the unsatisfactory bungling surrounding agriculture in Barbados.

There is no doubt that Barbados can produce a great deal of the food needed to sustain the population and reduce the staggering import bill, thereby providing redress in the balance of trade. There is equally no doubt that marketing and pricing are recurrent problems that affect agriculture in Barbados.

The Barbados Marketing Corporation, the Ministry of Trade and the Ministry of Agriculture have from time to time been under fire for various inefficiencies. There have been explanations and revised programmes have been put in train, but the nett result has been that food supplies and prices fluctuate wildly and the imports bill continues to be far greater than it should be.

All of which poses the question of whether Barbados clearly perceives the vital necessity of doing all she can to increase food production - as the CDB report says is the case.

The Government has been vigorously encouraging an agricultural diversification programme and specialist help has been forthcoming from various countries and international agencies. Large farmers and peasant market gardeners are being encouraged to produce and the Agricultural Development Corporation (ADC) has been experimenting with new varieties as well as preserves and new uses for familiar products.

But it makes no sense to encourage planters to grow more and then frustrate their efforts with a slow grinding bureaucracy - and this has been the case with several commodities within recent years in Barbados.

Further, the fact that considerable areas of Government land - even on agricultural stations - remain uncultivated and unproductive is an indication that more than the present lip service must be paid to the idea of agricultural diversification. Extension services offer advice to private farmers and some special projects are in train at some of the stations but there is an obvious underutilisation of available space.

In addition, the permission to divide and develop agricultural lands, - both private and Government owned - is a bewildering practice in a country which has severely limited land space and says it is interested in increased agricultural production and diversification.

The doctrine of agriculture as the only really lasting basis for development for countries such as Barbados and the rest of the Caribbean had been preached ardently and long by Mr. Demas while he was still Head of the CARICOM Secretariat. His evaluations have been borne out by events in today's world where there is now no such thing as cheap food.

Now more than ever, Barbados needs to eliminate bungling in agriculture which has been its means of survival for three centuries. Even now, its oldest traditional crop, sugar cane, is earning premium prices in today's inflationary conditions. And sugar has had a drastic shakeup within the last few seasons.

The CDB report has identified areas of deficiency in the Region and the vulnerability of small developing nations. The warning about agriculture should be heeded especially here in Barbados.

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*Yams are the second most important tropical root, or tuber, crop. The annual production, perhaps 25 million tons, places them second in importance to cassava. But yams are better food than cassava, and while they are usually thought to be more difficult to grow, under some conditions yams out-produce cassava. Yams fill an important role in the diet of many areas of the Tropics - a role that can increase in importance. That role and its potential are not, however, well understood.*

- Tropical Yams and their Potential  
Part 2 (Agriculture Handbook No. 666)  
U.S.D.A.

*AGRICULTURE THE KEY**From The Daily Gleaner (Jamaica) 27 October 1975*

Perhaps no other economic sector can contribute more to the fight against inflation than Agriculture, and this is precisely the area in which the most still has to be done. It seems likely that the prices of imported foods will continue to rise and this will affect the balance of payments as well as intensify the inflationary pressure on the domestic economy. At the same time, the country is faced with falling sugar prices and falling banana exports: all of which points to a very gloomy outlook for the future.

Although great emphasis has been placed on the agricultural sector by the Government, there is still much to be done if the country is to become anywhere near self-sufficient in the production of food. It would seem that in spite of efforts to increase local output, the volume of food imported each year increases, and we appear to be fighting a losing battle. In the case of Industry, there will always have to be imports. Equipment and machinery cannot be produced in Jamaica economically, therefore, it must be imported; raw materials have to be imported; and, of course there are thousands of goods which we consume which cannot be produced locally.

In Agriculture, however, most of what we consume can be produced locally. There exists the land, the climate and the manpower. All that is needed is for us to mobilize these factors and to put them to work. In the case of food which cannot be produced locally, we should look at the possibility of changing our eating habits so as to conform to what can be produced in Jamaica, and thereby reduce to a minimum what has to be imported. Our diet is based on centuries of habit, and bears no relationship to what the land can provide in Jamaica. Rather, our diet has been copied from other countries based on what they could send to Jamaica in order to build up their exports.

The key to Jamaica's economic survival in view of the international economic situation lies in Agriculture. While this Government has probably done more than any other to improve the performance in this sector, it still seems to be going about it in a piecemeal fashion. There has been no real

fundamental re-organization of the agricultural sector. Sugar production and banana production continue to decline, and domestic food production continues to lag behind demand.

It may be true to say that the country cannot afford the luxury of idle land and that therefore the Government should take it over. But the big question is what is Government going to do with this land. The problem is not so much that of putting land into production as it is of getting the product to the consumer at prices which the consumer can afford and which will still provide a reasonable margin of profit to the farmer. This means new roads, better means of transportation, better distribution, better storage facilities, better quality, and so on.

As has been said before, the only way to beat inflation is by increasing production and productivity. The agricultural sector offers the best opportunity of doing both.

#### GRIPE WATER HAS MORE ALCOHOL THAN BEER

*Gripe water, the age-old remedy for burping babies, contains twice as much alcohol as the average beer, according to British experts. It may, they say, be turning adults on to alcohol when they are still in the cradle.*

*The Avon Council on alcoholism says in a report that this was recently discovered when a 42-year old mother who did not drink and belonged to a temperance movement started showing signs of alcoholism. It was found that she had taken her child's gripe water to cure indigestion and built up her consumption until she was drinking between four and six bottles a day.*

- (Reuters)



*NUTRIENT-COST TABLES - WELCOME NEWS FROM CFNI**By Eileen Cox**From the Sunday Graphic, Guyana, 25 May 1975*

It is welcome news that the Caribbean Food and Nutrition Institute has produced a Nutrient-Cost Table for Guyana based on prices prevailing in January, 1975. The table shows the amount of nutrients - calories and grams of protein - that can be had for a dollar spent on each item of food listed in the table.

Some of the information will make the ordinary consumer sit up. At 16 cents per lb. counter flour supplies the family with 10,145 calories and 291.51 grams of protein for each dollar spent. On the other hand, cassava (fresh root) gives only 1,792 calories and 14.90 grams of protein for each dollar when sold at 27 cents per lb.

This leads us to the thought that if cassava is to be mixed with wheaten flour in baking bread, then some protein enrichment is required. This is a relatively cheap process. Bread itself at 42 cents per lb., according to the table, provides the family with 2,904 calories and 94.04 grams of protein per dollar.

*BEWARE OF ROT*

Let us compare peanuts in different forms. At \$2.45 per lb. peanut butter gives 1,075 calories per dollar and 51.46 grams of protein; peanuts in their shells (at \$1.81 per lb.) give 1,032 calories and 47.56 grams of protein for each dollar, while a dollar spent on peanuts, roasted and salted and sold at a price of \$5.20 per lb. will supply the consumer with only 511 calories and 22.69 grams of protein for each dollar spent in purchasing this item.

But, stop, look and listen. If the peanuts in the shell are one-third mouldy or rotten, then the nutrient value per dollar of peanuts in that form is reduced accordingly.

Split peas, red peas - which we seldom see - pigeon peas (dry), black-eye peas are all sources of protein and provide 150.41, 123.75, 98.41 and 95.04 grams per dollar when sold at 73 cents, 80 cents, 88 cents and \$1.15 respectively.

There is a big surprise in the meat line. Tripe at \$1.16 is good for 389 calories and 74.22 grams of protein for every dollar spent. Compare this with salt pork at \$2.35 per lb. - 1,451 calories, 7.23 grams of protein.

Chicken (whole) at \$1.42 per lb. - 369 calories, 39.50 grams of protein can be compared with chicken (neck and back) which gives 228 calories and 23.71 grams of protein per dollar when sold at \$1.56 per lb. And if the price of neck and back is as low as 51 cents per lb. - as I am told it is at one grocery - then your dollar spent on this item purchases far more nutrients.

#### SKIM MILK

Dried skim milk tops the milk products as it supplies 1,246 calories and 124.65 grams of protein for each dollar spent when the price is \$1.31 per lb. Whole dried milk at \$2.04 per lb. would give only 1,122 calories and 57.65 grams of protein.

Breadfruit is a disappointment. At 55 cents per lb. you obtain 454 calories and 7.27 grams of protein per dollar.

For calories alone brown sugar is in a class by itself - supplying 26,030 calories for each dollar when the price is 6 cents per lb. But it contains no protein whatsoever.

The Caribbean Food and Nutrition Institute believe that Nutrient-Cost tables will be useful to a wide range of planners - the agriculturalists, those who control importation and prices; nutrition educators and so on.

But to the consumer the table is invaluable even though it may be a headache to work out additional sums. For instance, we would wish to know the nutrient values as prices per pound vary. And we would wish to see the Food Composition Tables now available from the Institute.

There is one further exercise. Consumers will have to determine the portion of each food item consumed in a meal. It is not much good saying that you will buy 6,200 calories and 124.44 grams of protein with each dollar spent on parboiled rice and only 733 calories and 8.16 grams of protein for the dollar spent on sweet potatoes. You may be able to consume one pound of sweet potatoes at one sitting, but who can eat one pound of rice in a meal?

Yes, our days of study are not over. We now need the pupils of Dan Sharples to help us over these hurdles.

CAJANAQUOTE

*"A Cook: The Kitchen is his Hell, and he the Devil in it,  
where his meat and he fry together. His revenues  
are showered down from the fat of the land, and  
he interlards his own grease among to help the  
drippings.*

John Earle (1628)  
*"Microcosmography"*

*FOCUS ON CHILD PROBLEMS BY CHURCH WOMEN*  
*From The Daily Gleaner (Jamaica), 1 September 1975*

Caribbean Church Women in collaboration with Church Women United of the United States, have come up with plans for a programme of dialogue and travel throughout the Region, focussing on the child and problems affecting its satisfactory physical and mental development.

The programme began late August and is being pursued under the name "Causeway". It will run over a five-week period during which time teams of women will observe methods of child care and environmental situations in various Caribbean territories.

Participants chosen from child care workers in areas such as law, medicine, social work and education, will comprise representatives from the United States and the Caribbean. Jamaica is being represented by Ms. Una Tapper, a superintendent of two Children's Homes here.

"Causeway" is aimed at developing a comprehensive programme for child development out of the observations and recommendations the teams will make when they meet in Washington for the closing session. Implementation will then be a major thrust of the Church Women in their different localities.

*CAJANAQUOTE*

*"Women from the village with high social prestige might be persuaded to assume responsibility for developing concepts of better child health and participate in decision making. This might serve to bridge the gap between the traditional social life in the village and the innovative medical efforts of the modern mission hospital which is still regarded as an alien pressure.*

*J. Kreysler and I. Schulze-Westen*

*"Social factors influencing attitudes of mothers towards nutrition services in rural populations in Tanzania", Ecol. Food and Nutr., (1973), 2, 49.*

## NEWS BRIEFS

A 2-week Seminar on "The Management of Family Planning and Maternal and Child Health Programmes" was held in September at the Family Planning/Epidemiology Unit of the UWI. Attending the Seminar, which was sponsored by PAHO/WHO were health care and family planning personnel from all over the Caribbean including non-English-speaking territories.

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Display material on breast-feeding and infant feeding used in connection with the award-winning "Food and Drink" exhibition in July was again on show as part of the "Health Week" exhibition sponsored by the Kingston and St. Andrew Corporation, Jamaica. The exhibits were featured in a display of foods for pregnant and lactating mothers, malnutrition, diabetes and foods for the baby, mounted by the Nutrition Unit of the Ministry of Health and Environmental Control.

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The 4th Diploma Course in Community Nutrition, conducted by CFNI began on Monday, September 29th. The 24 participants in the Course are from Antigua, Barbados, Belize, Dominica, Jamaica, Montserrat, Trinidad, St. Vincent and Nigeria, with backgrounds in dietetics, home economics, nursing and agriculture. Miss Isabel Foster, retired staff member of CFNI and Coordinator of the last DCN Course, returned as a Consultant for this Course during the first four weeks.

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Dr. J. Alex Campbell, until recently on the staff of CFNI, attended the Xth International Nutrition Congress in Kyoto, Japan from August 3rd to 9th. At a meeting of the International Union of Nutritional Sciences held at that time, Dr. Campbell was elected Treasurer for the ensuing term.

Dr. Kenneth Antrobus, Medical Nutritionist at CFNI, attended a Conference on "Nutrition and Government Policy in Developing Countries" in Bellagio, Italy, sponsored by the Rockefeller Foundation. Dr. Antrobus presented "A Case Study of Jamaica" in the context of the Conference theme.

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At a Conference on "At-Risk Factors and the Health of Young Children", held in Cairo, June 23-27, Dr. Robert Cook, Director, CFNI, presented a paper on "Economic Factors". This Conference was jointly sponsored by the Egyptian Supreme Council for Population and Family Planning; the Department of Health, Education and Welfare, USA; and the International Union of Nutritional Sciences (IUNS); with support from the Research Corporation of New York.

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A course for Food Service Supervisors recently began in the Health Sciences Division of the Barbados Community College. This welcome development comes in the wake of three Food Service Supervisors courses previously conducted under the supervision of Miss Manuelita Zephirin, Public Health Nutritionist of CFNI. Miss Zephirin will be assisting with this course mainly in an advisory capacity.

## CANDI NEWS

REPORT ON THE THIRD ANNUAL GENERAL MEETING OF  
THE CARIBBEAN ASSOCIATION OF NUTRITIONISTS AND  
DIETITIANS (CANDI), HELD IN PORT OF SPAIN,  
TRINIDAD, JULY 26-27, 1975.

The Meeting was declared open by Mr. T. Taitt, Permanent Secretary, Ministry of Health and Local Government on behalf of Minister Khamaluddin Mohammed.

The feature address entitled "*The Expanding Role of Nutritionists and Dietitians in the Caribbean*" was delivered by Dr. Frank Ramsey, Director, National Nutrition Centre, Barbados. He reminded participants of their obligations to be more involved in the direct dietary care of the patient as well as in such related areas as the education of the doctor, and policy making decisions concerned with the total health and well-being of our communities.

A panel of distinguished medical practitioners and dietitians, namely: Dame Hilda Bynoe, Dr. E. Moses, Mrs. M. Look-Tong, in a discussion of the aetiology and care of gastro-intestinal disorders, emphasized:

- (1) The need for a good medical history and a thorough clinical examination.
- (2) The need to consider the extent of the illness, the effect of medication and perhaps the need for surgery to effect a cure.
- (3) The role of psychiatric factors in the causation of gastro-intestinal disorders.
- (4) The need for good nutritional education of patients.
- (5) The importance of knowing more about the overall effects of foods on the gastro-intestinal tract and elucidating some of the existing controversies.

"The Role of Dietary Fibre in Maintaining Health" was discussed by Dr. N.T. Byam, who stressed the importance of dietary fibre in ensuring optimum digestion, better absorption and utilization of nutrients ingested, decreasing gut bacterial activity, increasing water content of the gut and reducing cholesterol and triglyceride level. He made a plea for the processors of "convenience" foods to retain adequate fibre in their products for both routine or clinical use.

In his presentation of "The Cholesterol Dilemma"\* Dr. C. Bartholomew reiterated the warning that both the caloric content and the saturated fat in the diet should be reduced and the consumption of polyunsaturated fats increased simultaneously; regular exercise from an early age for persons engaged in sedentary occupation should be encouraged and all responsible for large scale catering should play their part in helping to effect such changes in the national diet.

"Food Service Management and the role of the Dietitian" was the theme of Dr. Aimee Moore, Management Director, Department of Nutrition and Dietetics, University of Columbia, Missouri, who thought that the dietitian must be a member of the Health Care and Management teams in order to function effectively. Good managers in this field, she said, were usually those who had a dual background in management and nutrition.

"Industrial Relations and the Dietitian" was discussed by a panel comprising a dietitian, Mrs. D. St. Hill; Mr. A. Cupid, the Public Relations Officer for the Civil Service, Trinidad and Tobago; and a Trade Unionist, Mr. S. Martin.

Because Trade Union employee-management battles were now the order of the day, it was necessary to practise the art of industrial relations. Management (dietitians) should be familiar with the labour agreements and terms, understand human relations and managerial techniques, and make the best use of the team approach.

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\*Reproduced in this issue of 'Cajanus'.



Other topics discussed were Consumer Education and the Food Processing Industry by Mrs. Applewhite, a dietitian in industry; and the Aladdin Food Service System by a representative of Aladdin Synergetic Incorporated, Tennessee, U.S.A.; and Miss Brenda Davis of the Bahamas who gave a slide presentation of the system at work in the Princess Margaret Hospital.

Health Programmes administered by the CARICOM Secretariat and the role of nutrition were outlined by Dr. Philip Boyd of the CARICOM Health Desk.

The following resolutions were the outcome of the deliberations on the foregoing topics:

- (1) CANDI members are committed to act positively to implement suggestions offered for better health care through management, inter-personal relationships and effective communication.
- (2) CANDI members should exert themselves in the promotion of continuing education at all levels.
- (3) In view of the extent of the regional problem of high blood pressure, and the "cholesterol dilemma" and the implications of the role of saturated fats, CANDI should do everything possible to effect a change in the national dietary with regard to its fat content and composition.
- (4) The University of the West Indies should be urged to provide the necessary training facilities for preparing personnel at the B.Sc. level in Food and Nutrition and Home Economics.
- (5) In view of the necessity for Caribbean territories to strive to become more self-sufficient in food supplies each territory should give priority to the formulation of a Food and Nutrition Policy and Nutritionists and Dietitians should play an active role in the implementation thereof.
- (6) The Food industry should be urged to embark on a system of nutrition labelling for processed foods, increase the fibre content of processed foods and participate more actively in consumer education.

## FROM THE EDITOR

### APPEALING TO YOU

*This issue is the last in our first volume of the new-look Cajanus. Our commitment to the change of format had to be total even though there was always room for modification in the details of structure. We hope that all our readers have now had time to reflect on the changes. But we hope for even more than this; we hope that you will write to us expressing your views and making practical suggestions which we may incorporate into future issues of Cajanus.*

*Maybe it is also timely to remind you, our readers, that we would welcome hearing from you on topics of common interest and would like to try to answer your questions on food and nutrition. In this way, the thriving correspondence and question-and-answer features of earlier volumes may be revived with your active participation in Cajanus.*

*While we aim to continue being informative in a somewhat informal way we do not refrain from being provocative or controversial in the interest of stimulating deeper thought and more fruitful argument. This issue, for example, in which a journalist and a scientist express views on certain aspects of beef and milk production, might act as a catalyst to the thought processes of those who must face the problems of increased food production or strive towards self-sufficiency in food in the developing countries and, more particularly, in the smaller Caribbean territories.*

*For Cajanus to be all of these things we need you to share your views with us and your fellow readers.*

THE EDITOR

## TOPICS AND COMMENTS

*HUNGER: A CHALLENGE TO CIVILIZATION\**  
By Amadou-Mahtar M'Bow

Hunger is a cruel experience which marks a man for life. As the Indian writer, Kamala Markandaya, who has known it herself, wrote: "Hunger is a curious thing: at first it is with you all the time, working and sleeping and in your dreams, and your belly cries out insistently, and there is a gnawing and a pain as if your very vitals were being devoured, and you must stop it at any cost...Then the pain is no longer sharp but dull, and this, too, is with you always."

But it is not about the individual experience, however terrible, that I wish to speak; it is about hunger as a world phenomenon, as a problem of civilization.

For the calamity of hunger has again smitten our world in circumstances which set modern civilization a challenge it must take up if it is to survive.

How can it be that mankind that rules the earth with the aid of science is proving unable to remove the double scourge of starvation and malnutrition, characteristic of an age that we should have liked to believe past? Should not this shake the self-confidence of a civilization so proud of its technical prowess?

Confronted with these questions, the industrial societies usually adopt one of two attitudes, both of which must be rejected.

One is to regard terrible famines - such as those which have afflicted the Sahel and Bangladesh - simply as a kind of short-term economic problem, a routine setback that can be quantified and then pigeon-holed. Deliberately or otherwise, an attempt is made to defuse the bomb with which famine threatens our technological civilization.

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\*Reproduced from *The Jamaica Daily News*, 28 November 1975. Dr. M'Bow is Director General of UNESCO.

The other attitude, stemming from the apathy and egoism ingrained in varying degrees in all of us is to remain oblivious of the cancer that is eating into the developed world's side.

Even if they wished to do so, the rich countries can no longer ignore what only a few decades ago went unnoticed by almost all "civilized" people - I mean ignorance, disease and starvation rampant in what was not yet termed the Third World. But today, thanks to the mass media - particularly television - the world, as Maurice MerleauPonty, the French philosopher, said, has been brought face-to-face with itself. It is as though we were present in person wherever starvation and malnutrition show their hideous faces.

When we see hundreds of thousands of people dying of hunger, and tens of millions of others directly threatened; when we see the irreversible havoc wrought by malnutrition, especially in children; and when experts tell us that, if nothing is done to remedy this frightful situation, 500 million children will die of hunger during the next fifty years in Southern Asia alone, we are compelled to recognize that vast areas of the Third World have become, or will shortly become, immense death camps.

#### *Way of Life*

Famine, in fact, reveals an underlying sickness from which our world is suffering. It indicts a whole way of life. While not underestimating the seriousness of natural calamities, or other factors such as the population explosion in certain countries of the Third World, we are forced to the conclusion that famine is a structural phenomenon inherent in the present system of world relationships.

This was clearly brought out by Dr. A.H. Boerma, the Director General of the Food and Agriculture Organization of the United Nations, when he said at the World Food Conference a few months ago: "The food crisis is desperate for those in hunger-stricken lands. This is the greatest scandal of our time. For at planetary level, there need be no crisis at all. The developed world feeds more cereals to its livestock than are consumed as food by all the vast populations of the developing countries together. With less greed

and more compassion, the world would not today see death by hunger as a reality for some, and a threat for many, among its citizens."

How eloquent the French agronomist, Rene Dumont was when he wrote: "We gave the countries of the Sahel the equivalent of 600,000 tons of cereals and \$150 million in 1973. Even so there was still a shortage of about 400,000 tons of cereals in the Sahel that year, resulting in thousands of deaths. In that same year, we fed our farm animals 400 million tons of grain (and 50 million tons of oil cake) - a thousand times as much food as was needed in the Sahel. Since we dump into our trash cans at least a tenth of the food we buy, all we had to do was 'throw away' a little less and we would have been able to provide what was needed."

#### *Examples*

To give another no less significant example: millions of children in the Third World are threatened with blindness through lack of vitamin A. But according to a United Nations report, "considering that each child has to be given two capsules of vitamin A, the total annual cost of protecting 100 million one-to-five year-old children all over the world against the risk of xerophthalmia (a disease of the eyes which can cause blindness) would be around \$3 million."

We need only compare this amount with the three hundred billion or so dollars spent each year on armaments, or with the billions of dollars wasted on advertising, for the inhuman absurdity of the present world situation, marked by the growing gulf between rich and poor countries, to become vividly apparent. This is a problem on whose solution hinges the future of mankind. There will, in fact, be no real and lasting peace until a solution has been found - that is until a new economic, social and political order has been created, which rejecting any form of servitude or exploitation, establishes honest cooperation among all countries in justice.

Some people may be tempted to think that all this is far removed from the matters properly within Unesco's purview. I am not one of them. Since Unesco's Constitution lays down, first and foremost, that it shall serve

peace, how could the Organization shut its eyes to a situation which represents one of the most serious factors making for instability and antagonism in the world? Since its Constitution lays upon it the duty of pursuing ethical action to protect and promote human rights, how could Unesco fail to show interest in the most fundamental of all rights, without which the others have no meaning, namely the right to life?

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#### *WORLD FOOD FUND*

*Representatives of 69 nations reached agreement to set up an investment fund to help grow food in the world's poorest countries, stating their intention to meet an initial target of \$1.2 billion.*

*United Nations sources said that it was a major breakthrough on aid cooperation between the industrial countries and the oil-exporting nations, who have been prodded by the United States to do more to help feed the world.*

*The United States is prepared to contribute \$200 million. The Common Market countries, with the exception of France, have agreed in principle to match this. And Iran, Saudi Arabia, Kuwait, Libya, and Venezuela among the oil producers stated their intention to contribute.*

*A pledging conference will be held to get the commitments on paper, probably in Rome in February.*

*WHICH COMES FIRST - BEEF OR MILK?\***By Ric Mentus*

The approval given by the St. Kitts CARICOM Heads of Government meeting to the expanded Food Plan for the region, re-emphasises the need for the Caribbean leaders to find a simple, practical way to combine their resources of people and land plus some foreign technology and finances to cut down on their massive food import bill.

The fact that this need to make better use of our resources has been long recognised by Caribbean people, and that over the years a number of pronouncements about improving the situation have failed to materialise, makes the present commitment welcome, if even there is a lingering suspicion about its chances of survival.

The new Food Plan as conceived by the CARICOM Secretariat, will cost about \$800 million over ten years and will, in the same period provide some 26,000 jobs. The idea is to use the extensive land space in Belize and Guyana to grow corn, soya and livestock. The one questioning voice raised about the plan at the meeting dealt with the emphasis being placed in the early stages, on the livestock production, particularly beef.

Although the reservations expressed at the meeting on this aspect of the plan had to do with its cost in relation to cheaper sources of protein food, it may be a good idea to look at the matter of beef production in the region in relation to the need for cheap, nutritious foods for the whole population in the region.

The problem with beef production in the Caribbean is that it is a very costly affair and as a result, the average man in the street cannot afford to pay for the end product.

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*\*Reproduced from The Jamaica Daily News, 14 December 1975.*

This brings us to the question of whether the Caribbean with a serious nutrition problem among the thousands of poor people, should embark on a costly meat production programme instead of one aimed at producing milk and milk products that can find their way on every table.

It has been the contention of some experts in the field that poor countries anxious to improve their nutritional standards can best achieve this by concentrating on a milk herd and use the excess male animals and barren heifers as a small spin-off beef industry, as a start.

Where this system has been tried, the dairy animal used has been the Holstein, a record producer of milk and a large enough animal to make the carcass worthwhile as meat. The problem with the Holstein is that it is not readily adaptable to tropical conditions, and like most animals from temperate regions, will require a long period of acclimatisation before it develops the natural immunities to make it a dependable animal for farmers.

Here in Jamaica, experiments have been carried out through the years to find both a suitable dairy and a beef animal. First came the Jamaica Red in the beef class, but it was found to be too lean in the rear quarters. Further research continued and finally the Jamaica Black came on the scene correcting the deficiency of its forerunner.

But the Jamaica Black has a problem of its own. Because of its colour, it suffers from the tropical heat much more than the Red or other lighter coloured animals such as the Zebu. Because of this factor, to get the best out of the Black it should be reared on land with abundant shade trees or other protection where the animals can take shelter in the heat of the day.

Providing these facilities will put the cost of meat from these animals even higher. As a result, there are some experts who feel that this type of beef production can only be economically carried out if there is a market for such higher priced beef. In Jamaica, the tourist trade was, at least for a time, providing such a market, which means that by and large, the man in the street hardly ever got the choice meat from the Jamaica Black.



On the dairy side, the researchers came up with the Jamaica Hope, which unfortunately is a small animal and even if its milk production performance is commendable, will hardly be the ideal stock to run the kind of milk-beef programme suggested before.

Apart from these considerations, if the beef project is going to be located in whole or in part in Guyana, certain adverse conditions of nature will have to be taken into account. Guyana has two major savannah areas suitable for the rearing of cattle and which have been used as such over the years. One is called the Intermediate savannah about 60 miles inland; the other, the Rupununi savannah, lies along the southwestern border with Brazil and is the more extensive.

The problem with the Rupununi is that, because of its closeness to Brazil which is afflicted with the dreaded Foot and Mouth disease, it becomes prone to similar attacks and there have been occasions when several hundred animals had to be destroyed in the interest of safety.

In spite of this measure, Trinidad has for years refused to buy beef from Guyana unless it could get a guarantee that the animals came from the Intermediate savannah or the coastal belt.

The other problem with the Guyana savannahs is that the grass they produce lack the key nutrients the cattle need to thrive and reproduce in the meat. To correct this will call for either massive use of special fertilisers to the soil to improve the quality of the grass, or providing the missing nutrients directly to the animals through special feeds.

Either way, it will add considerably to the cost of the project. It is hoped these matters will be given the consideration they deserve when the details of the plan are being worked out.

*THE VERSATILE COCONUT\**

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

Coconuts often conjure up a romantic image - palm trees growing by the seashore, the fruit dropping into the water only to be carried by ocean currents to islands hundreds of miles away. But despite its exotic reputation, the coconut and its tree have provided food and shelter for many cultures throughout the world.

Tropical islanders and coastal dwellers use the leaves for thatching roofs and for baskets, the tree trunks for housing and the hairy material on the outside of the nut (husk) is used for matting and other items. This has been going on for centuries.

The Western world, however, has known the coconut for only the last few hundred years. In industrialized countries, coconuts are now used for oil production. The dried white meat of the kernel (copra) has had oil extracted from it for years. The oil was first used for soap manufacturing and more recently for shampoos, detergents and use in human foods. And the coconut presscake left after the oil has been squeezed out has been used mostly for animal feed.

Because most industrialized countries are in cold, temperate zones, many people in these areas do not realize how many different parts of the coconut palm can be used for food. The familiar white meat of the coconut, often dried, can be used in a variety of ways. It is this form that is mostly known in the United States, where it plays a minor role in a variety of candies and desserts.

In coconut-eating cultures, the soft, jellylike, unripe white flesh is also eaten and, in fact, can be a very useful food for feeding young infants because it is soft, easily digestible and contains a considerable amount of fat and protein.

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\*Reproduced from *Los Angeles Times Home magazine*, August 24, 1975.

Some confusion exists in the differentiation between the milk and the water of the coconut. The water is the clear fluid found in the middle of the green coconut. It contains various sugars, is sterile and has little nutritional importance, although it is used as a traditional treatment for diarrhea, even cholera, in various parts of the world. In recent years it has been tried intravenously, even directly from the coconut. This provides rehydration for young children in need, and is helpful when disaster makes more usual sources of intravenous fluid unavailable.

The milk of the coconut, however, is extracted by squeezing the white coconut flesh. It is quite rich in fat and has a delicious flavor. In many parts of the world people prefer to cook rice and other foods in coconut milk rather than in water.

Two other less-recognized sources of food from the coconut palm are the growing head or heart of the palm (*coeur de palme*) and "palm wine" or toddy. The heart of the palm is considered a delicacy and is justifiably expensive, because after it has been removed, the palm usually dies. Palm wine is obtained by tapping the trunk of the tree; the sap that oozes out is fermented to make a somewhat alcoholic palm toddy.

Apart from the coconut meat items used by pastry cooks and candy manufacturers, the main nutritious item obtained from the coconut is its oil. This, as has been mentioned, is expressed from copra or dried white coconut meat. Coconut oil has been used in "filled milks" made of the dry solids of nonfat cow's milk with coconut oil added. In addition, a number of infant formulas also contain coconut oil.

In contrast with many other vegetable oils, oil from the coconut has the disadvantage that its fatty acids are saturated, so that despite its vegetable origin, coconut oil is best avoided by those who follow modified fat diets to decrease the possibility of coronary artery disease.

*APPARENT RACIAL DIFFERENCES IN HEMOGLOBIN VALUES*

*By J.A. Campbell*

Garn, Smith and Clark, in the American Journal of Clinical Nutrition, 28, 563, 1975, have pointed to apparent differences in hemoglobin values between American black and white individuals. The study was based on an examination of hemoglobin levels in 27,144 participants in the Ten-State Nutrition Survey of 1968-70, all determined by the cyanomethemoglobin method. Hemoglobin levels for blacks were found without a single exception to be systematically lower at each of the 24 ages compared and in both sexes. When grouped according to per capita income the differences were found to be slightly less in the low income group and slightly more in the high income group. Overall differences averaged approximately 1.0 g per 100 ml and agree with those found in two other surveys.

In a second note Kraemer, McFarland, Dillon, and Smith in the same issue (p. 566) report significant differences which are not quite as large for athletes on a football team. They suggest that the disparity may be at the genetic level.

The above data indicate that racial differences may exist in nutritional parameters. They suggest that care should be exercised in using standards obtained with one ethnic group for judging the status of other groups of individuals.

THE ROLE OF THE DAIRY COW IN MEETING  
WORLD FOOD NEEDS\*

by

*K.E. Harshbarger*

The anticipated increase in population during the last 25 years of this century can be expected to place critical demands on the food production resources of the world. With earth's limited land resources, a time must come when the production of additional food on a given land area will be very difficult, if not impossible.

*Land Resources*

Based on FAO estimates, only about 11 percent of the world land area is utilized as permanent crop land. Another 22 percent is used for permanent pasture and meadows, and about 30 percent is covered with forests. About 27 percent is not available for agricultural production. Some of the land now classified as grassland or permanent pasture may be shifted to crop land by making major investments in reclamation and irrigation projects. The high costs involved and climatic limitations restrict the potential conversion of grassland to crop use.

*Plant Resources*

Plants utilize soil nutrients, water, carbon dioxide, and solar energy to produce food for humans and animals. The seeds of wheat and rice are primary sources of food energy for people. By-products of wheat and rice, and the forage parts of food crops, are available for animal feeding to produce additional food.

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\*Reproduced from *Nutrition News*, Vol. 38, No. 3, October 1975.

*Dr. Harshbarger is Head of the Department of Dairy Science, University of Illinois at Urbana-Champaign, Urbana.*

The need to balance the food supply on a world-wide basis by shipping cereal grains to the food-deficit areas has received much attention during the last few years. In 1971 approximately 43 percent of the wheat and 15 percent of the corn produced in the United States were exported. It has been estimated that 85 percent of exported feed grains is actually used for livestock production. In effect then, land in the U.S. is supporting livestock production in other countries to upgrade their diets with animal products. As the cost of energy increases, higher shipping costs should tend to encourage the export of livestock products rather than bulky feed grains.

#### *Animal Resources*

Animal products have been a part of man's food supply for thousands of years. Cattle were domesticated about 5000 years ago for a more reliable food supply, animal power, and other purposes. Now, with a critical food shortage facing the world, the competition between man and food-producing animals for the available crop foods needs to be critically evaluated. Animals must be utilized which are able to convert materials non-edible to humans to high-quality, essential nutrients in order to reach maximum world food production.

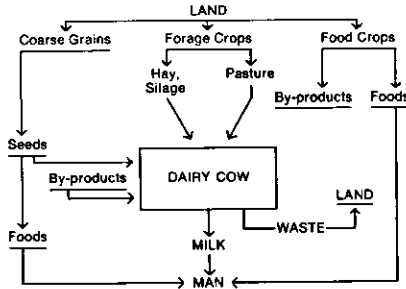
Ruminant animals, such as the cow, possess a unique digestive system which is able to convert inedible plant materials to human food in the form of milk and meat.

Efficiency of the dairy cow in relation to other animals in the utilization of land and feed resources for the production of more food is presented in Figure 1.

About 60 to 65 percent of the feed nutrients used for milk production comes from forages or fibrous feeds. By-products from the processing and refining of food crops for human consumption can be utilized to supplement forage and reduce the need for feed grains. For example, dried beet pulp from the manufacture of sugar can be fed to dairy cows. After milling wheat seed, only about 40 percent of the original energy and 36 percent of the original protein produced by the plant remain for human consumption.

Thus, the nutritive values in the by-products from the milling process and, to a limited degree, in the wheat straw can be recovered by the cow.

Figure 1: Utilization of land resources for milk production.



Basically, the proportion of a specific plant nutrient recovered in the animal product has been used to express the biological efficiency of conversion of crop nutrients to human foods. Estimates of the efficiency of protein and energy conversion by various classes of livestock are presented in Table 1.

Table 1: Efficiency of livestock in converting feed nutrients to edible products.<sup>2</sup>

CLASS	EFFICIENCY OF CONVERSION, % (a)	
	Protein	Energy
<i>Nonruminants</i>		
Broilers	23	11
Turkeys	22	9
Hens (eggs)	26	18
Swine	14	14
<i>Ruminants</i>		
Dairy Cattle	25	17
Beef Cattle	4	3
Lambs	4	-

(a) Based on lifetime production and feed consumption.

Food-producing animals which can efficiently convert roughage and food crop by-products to high-quality human food must be used for the benefit of mankind.

#### *Milk Production in the U.S.*

In the United States and other temperate zone countries, milk has been an important part of the national diets, providing a large amount of high-quality protein, calcium, phosphorus, and riboflavin, and a moderate amount of vitamin A, and energy or calories.

The amount of milk produced has increased slightly in recent years on a world-wide basis and has remained relatively stable in the U.S.

However, in the last 30 years, as new knowledge in genetics and inheritance, and of feeding and management of dairy cows was applied, feed efficiency in U.S. milk production increased about 54 percent.<sup>1</sup> This increased efficiency of milk production saved about 50 billion pounds of total digestible nutrients, or the equivalent of 1.1 billion bushels of corn per year. Even though more grain was used per cow, each cow produced a greater quantity of milk; therefore, the total feed resources used for milk production were reduced.

#### *Production in Developing Countries*

Under adverse conditions in animal production, these efficiencies of conversion of feed by animals are not obtained. For instance, less than optimum biological efficiency is obtained from livestock production in the developing countries where these animals are scavengers. Developing countries maintain about 60 percent of the world's livestock, but produce only 20 to 30 percent of the world's livestock products.<sup>3</sup> In these countries where the milk supply is very limited, the average diet tends to be low in calcium, protein, and riboflavin. Thus, major changes in upgrading livestock management systems in developing countries are needed to improve efficiency of food production.



In some developing countries special dairy production projects have been established to increase milk production. The increased milk is used to nourish recently weaned children and to improve the protein quality in the diets of their people. With greater economic development and full utilization of feed resources, milk production can be expected to increase substantially in many developing countries.

#### *Future Role of Dairying*

The future role of the dairy cow in world food production appears favorable because:

- (1) The dairy cow efficiently converts roughage, food crop by-products, non-protein nitrogen, and feed grains to a high-quality human food.
- (2) High-quality milk protein effectively balances the amino acid patterns present in plant proteins.
- (3) Milk is a critical source of nutrients for most infants and children as well as adults.
- (4) Mechanization in the dairy industry can increase productivity.
- (5) Dairying favorably effects conservation of land resources by using forage crops, preventing soil erosion, and returning animal manure to the land to maintain fertility.

Only by managing our land resources to assure ourselves of a continuing food supply can we protect the current and future generations. Individually, and on a world basis, man must accept the responsibility for planning his future to utilize world resources and establish stable systems of agriculture.

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CAJANAQUOTE

*"A world with no dietary indulgences would be a sad place; and there is plenty of room for fruit, wine and coffee. But profligacy must be maintained within a policy designed, above all, to feed people. It surely should not, as now, be an economic imperative."*

*From "Seeking an Agricultural Strategy."*

*New Scientist 68, 974, 315.*

## NUTRITION AND ATHLETIC PERFORMANCE\*

- A Review Article -

One of the basic conditions necessary to maintain top physical efficiency and performance is optimal nutrition. This concept has been defined, not as the consumption of excessive calories which would result in obesity, but as the nutrient intake necessary to maintain man in maximal physical condition for athletic or other performance.

*NUTRITIONAL NEEDS*

It is rather difficult to assess the effect of a single food component on physical performance because of the interference of such variables as motivation, differences in experimental conditions, types of work performed, and the wide range of individual responses. However, the performance of an athlete is largely dependent upon a ready supply of nutrients needed by his working tissues. Contrary to common beliefs, the question of nutrition for the athlete is perfectly straightforward and involves little if any mystique. Although relatively little investigation has been done into the special nutritional problems of athletes, the best available evidence to date suggests that the optimum diet for athletes, as for non-athletes, must supply adequate quantities of water, calories, protein, fats, carbohydrates, minerals and vitamins in suitable proportions.

*Calories*

In general, by virtue of his high energy expenditure, the athlete in training will require a greater caloric intake than the more sedentary person. Whereas the recommended daily allowance of calories for the average man is in

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\*A shortened version of an article appearing in the *Dairy Council Digest*, Vol. 46, No. 2, 1975, published by the National Dairy Council, U.S.A.

the order of 2,700 to 3,000 according to the National Research Council's RDA, a vast majority of athletes undergoing training may require more than 3,000 kilocalories per day, depending on the athlete's size and the energy demands of the particular sport. The athlete's greatly increased caloric expenditure automatically increases his appetite, with the result that he ingests more food. Although it is unlikely that an athlete in heavy physical training will gain weight, excessive caloric intake above the daily energy expenditure is not recommended, as it results in an increase in fat deposition (obesity) with a subsequent increase in body weight, which may present a greater workload to the heart. The increased caloric requirements should be provided by increasing food intake across the board without in any way significantly altering the proportions of the micro- and macro-nutrients of the diet. There are no special food sources which supply extra reserves of energy that are not supplied by other foods with the same nutrients. An adequate guide on which an athlete should base his food selection is the basic food groups.

### *Protein*

The major role of proteins in the body is the construction and preservation of the integrity of body tissues. The minimum protein lost by a 70-kg man consuming no protein has been estimated to be 23 g/day or 0.33 g/kg of body weight. Thus, the protein allowance of 0.80 g/kg of body weight recommended by the National Research Council should provide the protein an athlete needs for peak performance. Furthermore, since the athlete's caloric intake is increased, a nutritionally adequate diet of normal foods will usually provide a protein intake at least twice as high as that of the moderately active non-athlete, and this is probably more than the athlete needs.

*Thus, the customary preference of athletes for high-animal protein diets, commonly provided in the form of steak, is due to psychological rather than physiological factors.* It has been noted that an increased protein intake also increases the water requirement since (1) additional fluid is required to eliminate the nitrogen by-products in the urine, and (2) as muscle contains 72% water, each gram of protein retained as muscle requires

three grams of water. In addition, an excessive protein intake serves only as an expensive and inefficient source of energy.

### *Fats and Carbohydrates*

Inasmuch as the aforementioned reasons exclude the protein from consideration as a major source of fuel for working muscles, attention is focused on fats and carbohydrates. Carbohydrate has been traditionally regarded as the exclusive fuel for skeletal muscles. It has also been reported that fat supplied about 50 to 60 per cent of the energy in subjects engaged in light to moderate aerobic exercise. Moreover, in prolonged aerobic work, fat contributed in an increasing amount - up to 70 per cent - to the energy fuel. On the other hand, in more strenuous exercise where anaerobic metabolic processes were involved, carbohydrates became the main energy source. Thus, the utilization of carbohydrates varies inversely with the oxygen supplied to the working muscle. The more inadequate the oxygen supply (due to increased metabolic requirement during prolonged and heavy exercise), the higher the carbohydrate utilization.

Different diets appear to markedly influence glycogen stores in the muscles. The higher the glycogen stores, the better the performance. The importance of a high initial level of muscle glycogen is that it enables the athlete to maintain his optimal pace from start to finish. A dietary manipulation, known as carbohydrate loading, has been reported to increase glycogen stores in the muscles and, thus, to improve performance during endurance events exceeding 30-60 minutes. Basically, this practice involves exercising the muscles one week in advance to exhaust glycogen stores. The diet is then modified to be almost exclusively fat and protein for about three days to keep the glycogen content of the exercising muscles low. As the competition day nears, large quantities of carbohydrates are added to the previous diet.

The use of this dietary regime is, however, not without possible risks. Glycogen retains water and both may be deposited in the muscle to such an extent that a feeling of heaviness and stiffness is experienced.

The resulting weight increase due to water retention may reduce the ability of the athlete to take up oxygen maximally. Carbohydrate loading designed to increase endurance has also been reported to produce cardiac pain and electrocardiographic abnormalities in an older marathon runner. The effect of this practice on heart function is worrisome enough to caution all athletes against its use without expert advice from competent physicians.

### *Vitamins and Minerals*

The common belief that "if enough is good, more is better" has probably been largely responsible for the continued use of massive doses of vitamins and minerals to improve athletic performance. The rather limited information on the effect of vitamin and mineral supplementation on athletic and physical performance has been reviewed by several investigators.

Most investigators do not advocate vitamin supplementation for athletes for several reasons. It is a fact that excess water-soluble vitamins cannot be stored in the body and, thus, are rapidly excreted in the urine once tissue levels are saturated. Recent studies have also revealed that vitamin C supplementation had negligible effect when compared to that of a placebo on endurance performance and rate, severity, and duration of athletic injury. In addition, vitamin C supplementation may increase biochemical reactions in the body that destroy vitamin B<sub>12</sub>. The fat-soluble vitamins are retained and stored in the body, and daily supplementation of large quantities of vitamin A has been known in some instances to be very toxic and even fatal. Thus, although it may be deemed advisable to increase vitamin intake for the athlete in training, this need may be met simply when the total caloric content of a nutritionally-balanced diet is increased.

An important change in mineral metabolism caused by physical exertion is the loss of salt in the sweat which contains 20 to 30 meq of sodium per liter. Excessive sweating from heavy physical activity and exercise can lead to sodium losses of as much as 350 meq/day (or more in the non-acclimated individual), an amount more than enough to disturb homeostasis. A total sodium deficiency results in diuresis since the body is unable to retain water.

Because of high concentrations that can be lost in sweat, the salt (sodium chloride) intake of athletes should be more than that of the usual American adult intake of 6 to 18 g/day, which contains 100 to 300 meq of sodium. *Excessive salt intakes, however, are to be avoided as they increase water requirement and could result in greater water retention, which could likewise impair the athlete's efficiency during training. Salt may be replaced at the end of the day by salting foods. The use of salt tablets should be avoided since gastrointestinal disturbances have been known to occur.*

#### *Water*

Whereas man can live without food for 30 days, he will die in five to six days if deprived of water. Water serves as the principal vehicle for transporting substances and heat within the body. It is the only means of dissipating body heat effected by evaporation of sweat. Since body heat production is greatly accelerated during physical exercise, water for perspiration must be replaced. Otherwise, body temperature increases beyond normal and may eventually lead to heat stroke. It is imperative to increase fluid intake to maintain fluid balance as the work level and environmental temperature increase.

The manner of replacing fluid and accompanying mineral losses during exercise is still controversial in the sports community. The merits and demerits of natural foods, plain water, water plus salt tablets, saline solutions, and glucose or glucose and salt solutions for the above purpose have been discussed but, to date, no agreement on the optimal course of action has been reached.

#### *SPECIAL CONCERNS*

In addition to the obvious need for adequate nutrient intake by the athlete, the psychological aspects of eating are of equal importance. It is important that meals be palatable and presented at appropriate and suitable times. It has been suggested that athletes should have at least three meals a day, or perhaps more frequent light meals especially if the sport concerned

requires long hours of effort. Sports of shorter duration and less demanding in energy should not require any drastic modification of the pattern of meal distribution except that, from the point of view of digestion, the pre-game meal should be scheduled three hours prior to an athletic contest. The rationale behind this practice is that as the blood supply is compromised between the working muscle and digesting food, one or both functions may suffer.

The problem of providing the athlete with a nutritionally adequate diet is complicated by the emotional tension that so often accompanies competition. Indigestion caused by pre-game nervous tension has resulted in the current popularity of the liquid pre-game meal, claimed to cut down nervous indigestion during athletic contests. Liquid meals, consisting of the recommended daily dietary proportions of nutrients, have reportedly eliminated nausea, vomiting, and abdominal and localized cramps. It was also the opinion of the authors that strength and endurance were improved although no data were offered to substantiate this observation.

However, the explanation for these beneficial effects does not lie in any special food contained in the fluid diet. The fluid form is simply easier to digest since it eliminates the liquefaction process in the stomach under nervous conditions.

A nutritional practice which is harmful and thus must be strongly discouraged is total starvation alternated with semi-starvation and dehydration. This is routinely practiced by boxers and wrestlers in order to make lower weight classifications. Total starvation does more than dehydrate the body. The accompanying weight loss also involves loss of protein, glycogen, minerals, enzymes, and other important cell constituents. These responses diminish body reserves for athletic demands and, in the young competitor, could affect normal growth response. This practice has been condemned by the American Medical Association as it serves the ethics of sportsmanship no better than it does the health of the athlete.



Food faddism and ignorance are more prominent in the area of athletics than in any other sphere of nutrition. Special dietary schemes and ergogenic aids have been advocated by trainers and coaches to improve performance and endurance. Common examples of these schemes include wheat germ oil supplementation (as a potent source of vitamin E and polyunsaturated fatty acids) as well as the addition of gelatin (as a source of glycine), phosphate, and alkalizing agents to the athlete's diet. Similarly, certain foods have been restrained. For example, milk has been withheld on the contention that it (1) causes "cotton mouth", (2) curdles in the stomach, and (3) lowers the respiratory quotient, hence decreasing efficiency. Although these dietary schemes may have some kind of psychological advantage for the athlete, they have neither sound physiological nor nutritional basis but, rather, they are based mainly on older traditions and superstitions. Numerous other nutritional misconceptions relative to athletes' diets have been discussed in the light of scientific data.

A recent study conducted to determine the nutritional knowledge of physical education students demonstrated that students who ranked college courses as the primary source of knowledge scored significantly higher than those who ranked their parents or coaches. This study reveals *the need for better nutrition education for coaches and trainers*, who actually have greater influence on habits of athletes on account of their close contact and association. Coaches and trainers should discourage athletes from seeking "super" or "wonder" foods or drugs to substitute for hard work in training and adequate nutrition.

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*A full list of references can be supplied on request.*

THE NUTRITION COMPONENT OF HEALTH EDUCATION\*

by

Jane E. Thomas

While health education must necessarily involve a nutrition component, it is perhaps not an exaggeration to say that all nutrition education represents potential benefits to health. In common with other aspects of health education, the measure of success is to be sought in behavioural terms, and in this field the specific goal is to improve people's eating habits.

While it is necessary for individuals to be informed about certain nutritional facts before they can be expected to change food habits, knowledge alone will not bring about change. Similarly, we cannot hope to be successful without taking into account prevailing attitudes. However, since these relate to behaviour in a complex way, changes in attitude may not be directly related to the hoped-for changes in behaviour.

The work of Rosenstock, Kegeles and others in developing a model of health behaviour might well hold direct parallels in the area of nutrition. They suggest that before a person adopts the desired behaviour pattern he must be aware of his vulnerability to undesired health outcomes; he must perceive these outcomes to be of a serious nature and he must be aware of and accept the beneficial value of the alternative behaviour.

However, intervening variables such as expense, pain or unpleasantness may result in a conflict between an individual's willingness to act in a given way and these perceived negative aspects of such behaviour. This conflict must be resolved before the desired behaviour change can occur.

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\*This paper was given at the 1974 Van den Berghs and Jurgens Nutrition Award Seminar and published in *The Health Education Journal* (Vol. 34, No. 1, 1975), from the editors of which permission for reproduction has been granted. Dr. Thomas is a Research Assistant to the Health Education Council.

Experience with attempts to change nutritional behaviour suggest that this model might have applicability in the field of nutrition. As early as 1941, Hatcher showed that teachers who guided pupils to analyse their own diets, to decide what they needed to do to improve them and to check their progress, were able to obtain striking improvements. In contrast, in those instances where the teacher decided what should be studied and how it should be done, and made the evaluation, there was no significant improvement in the diets of pupils following instruction.

Embodied in this concept of personal decision are the vulnerability and "perception of negative consequences", prerequisites of the health model previously discussed. Instruction of the benefits of alternative behaviour lies in the hands of an appropriately informed individual. Benson's work in rural schools in the US indicated that children improve their food practices when they (1) discover for themselves what changes they have to make; (2) are strongly motivated to learn about foods and to apply what they learn to their own diets, and (3) have access to the right kinds and amounts of food. This latter point brings into play a vital aspect of nutrition education, namely making the best use of available resources since economic considerations inevitably present an intervening variable between theory and practice in this field.

Consideration might usefully be given to nutritional aspects of health needs throughout life and in what ways these needs are currently being met. In this way some of the practical problems of nutrition/health education will become apparent. At the very outset one difficulty is evident: in the course of an individual's lifespan, changes of income, location, emotional state, religious beliefs, state of health and food availability will require modification of food habits. Nutrition education should equip him to make these adjustments wisely. Nonetheless, changes of this nature together with alterations in knowledge relating to nutrition and health, cannot be predicted. Hence educational activity must be an on-going process and itself capable of adjustment.

*Changed Needs*

Changes in lifestyle and patterns of disease during the last century have already changed the orientation of people's needs with regard to nutrition education. In the past there has been a tendency to relate good nutrition to the absence of ill-health. However, the trend is increasingly towards a demand for the elaboration of nutritional factors in relation to optimum health, growth and maximum longevity. This less well-defined area of nutritional knowledge offers the possibility of divergence of scientific opinion as to the behaviour which should be advocated. Similarly, dietary advice may appear to conflict in the face of concurrent health needs.

Thus in pregnancy, the message with regard to desirable weight gain may be the subject of divergence between different schools of thought. Later, infant feeding becomes the centre of discussion. While traditionally, bigger was better, in the light of increasing knowledge the mother is faced with consideration of this phase in the production of obesity, possibly of an irreversible nature.

While it is desirable to avoid this condition in childhood because of its poor prognosis and implication in disease processes in later life, work has also drawn attention to the health threats which it poses during childhood. Thus it has been implicated in increased respiratory infection, delayed motor development and impaired social/psychological development.

A survey in Worcestershire highlighted the problem of overnutrition before the age of one year. In general, the recommended intakes of calories and protein were exceeded and this coincided with the early introduction of solid foods. Of the children studied, 39.7 per cent were offered solids before four weeks, 93.3 per cent before thirteen weeks and some babies had been introduced to solid foods during the first week. Thus nutrition education of the public would seem to be required from the health professionals' point of view in relation to infant feeding practices. However, it is the perceived needs of the mothers concerned which plays such a vital role in behaviour change. The traditional image of the bonny baby as a picture of health is still very much with us.

*Opposing Hazards*

In our concern for the overfeeding of infants the obverse of the coin cannot be ignored. Intra-uterine undernutrition is more common in developed countries than postnatal undernutrition. Approximately one-third of all newborn infants weighing less than 2,500g are small for gestational age. Various experiments have shown lower neonatal brain weights in rats following intra-uterine undernutrition. Winnick in showing that approximately two-thirds of the human brain cells accumulate before birth has drawn attention to a parallel threat in humans. Follow-up studies in which children who were malnourished and rehabilitated early in life were tested at school ages, generally indicated that they performed less well than unrelated well-fed controls. Although the influence of cultural and socioeconomic factors on mental development has not been separated from the possible nutritional ones in these studies, there is clearly evidence for concern, especially since not all sections of the population are subject to the nutritional excesses which have become increasingly associated with the western life style.

The means are available for the dissemination of appropriate nutritional information. It remains, on one hand, to stimulate perception of a need for this and, on the other, to clarify the behaviour pattern which should be endorsed. The penalties in social and health terms of being overweight throughout life are widely appreciated; the role of infant feeding in its genesis is gaining acceptance among the public but could be further advertised. The threats to infant and child health of inadequate feeding are the natural concern of every mother. However, changes in culture and social environment may have disrupted traditional advice patterns, making them inappropriate or unavailable. Hence it is essential to provide the necessary nutritional information basic for good feeding of infants and children.

This brings the professionals to an examination of the eating habits which they should seek to promote. Although it would perhaps behove us to stimulate a widespread return to breast-feeding, in this, as in all areas of health/nutrition education, the social situation of the day must be borne in mind. It is evident that in the context of today's lifestyle, breast-feeding

is not always convenient for mothers who must return to work soon after the birth, or for other reasons cannot always be on hand at feeding time.

#### *Educator's Role*

In these instances the role of educators must lie in the advocacy of appropriate usage of proprietary milk substitutes. Further to this, the importance of weaning and introduction of solid foods on a rational time-scale present areas where clear advice is required.

The basic motivation of mothers can be utilized through existing health services in the improvement of infant feeding practises and in laying the groundwork for satisfactory eating patterns in early childhood.

With his arrival at school the child will then encounter the formal educative processes which should encourage him to use his increasing independence in the adoption of behaviour patterns consistent with good health, and this must naturally include the area of eating habits. However, it must not be forgotten that by this time a child has already been exposed to a substantial amount of nutrition education. He has experienced five years of eating several times each day in the context of his particular home and cultural environment.

The child entering school is not a blank page, waiting to be written on, when it comes to ideas and feelings about food. Many of his behaviour patterns are already formed. Some educators have failed to recognise that because a person is not acquainted with the teacher's concepts about food and nutrition, this does not mean that he has no concepts of his own. The task is to help the child build nutritionally viable concepts, while respecting those viable concepts which he has already absorbed from his family and cultural background.

The professionals have identified several nutritional "problem" areas liable to prejudice good health, with which they feel education between five and sixteen should be concerned, besides the basic information giving process.

One of these is the continuing problem of overweight, and while this is naturally a cause for concern and deserves appropriate elaboration, it requires sensitive handling. Here the education is reinforcing social pressures which may make life miserable for an overweight child. Anorexia nervosa is not a sufficiently rare condition for its possible occurrence to be ignored.

Another area which survey work has brought to the attention of those concerned is that of poor breakfast habits. Mid-day eating habits have also been suggested as a cause for concern among modern school children.

Not only must educational activities cope with the health concerns of these years, but must be a preparation for the years ahead and equip the individual to cope with the problems of later years. While the natural response to the nutrition problems in the school years are matched with information and exhortation on "good food habits" in relation to growth and development, there is also an increasing recognition that efforts should be made to lay down behaviour patterns appropriate to the avoidance of health problems in later life.

#### *Conflict Area*

This again leads us into an area of conflict with regard to the dietary advice which should be given. In addition, in seeking to prepare young people for the hazards of later life, we encounter the problem that we cannot entirely predict what these will be. Since new knowledge is always forthcoming, we cannot guarantee that our present advice will not subsequently be found inappropriate to another concurrent health hazard. As previously described the felt needs of any group play a vital part in the adoption of any behaviour pattern.

Thus, in a recent survey of the health concerns of 5,000 American schoolchildren, the findings were summarised by one high school boy's comment: "Don't teach us what you want to teach; teach us what we want to know". This may not, in fact, imply any conflict in final outcome, but perhaps a difference in approach.

This question of approach was raised in a recent one-day conference held by the Royal Society of Health, entitled "Health and Nutrition Education as part of the school curriculum". The view was expressed that nutrition teaching in schools lacked rational thinking and understanding. One speaker deprecated the use of a didactic teaching approach, where a child was told what to eat for good health. Current methods were felt to be of a "once only" nature which evaded teaching and did not lead into a sequence resulting in understanding. The simplistic approach often adopted with regard to nutrients is also perhaps inappropriate in the context of today's highly processed foodstuffs. Teaching nutrition on the basis of discovered needs has become an increasingly popular concept and it has been postulated that educational procedures will gain in effectiveness as they become geared to the specific needs of individuals and communities.

At present both health and nutrition education do not occupy a formal niche in the school timetable, but their different aspects may be dispersed widely over the curriculum. Nutrition education has great potential for expression in all areas, but there is a tendency to concentrate efforts in the time allotted for home economics, which suffers from the drawback that this subject is largely taken by girls and often excludes those who are pursuing more academic subjects.

#### *School Life*

If we are sincere in our desire to lay down nutritional behaviour in the population for health at all stages of life, these exclusions are somewhat anomalous. One possibility would seem to be the introduction of nutrition as part of a formal health education course throughout school life. Alternatively, a concerned effort could be made to rationalize and increase the nutrition component of other subjects taken by both sexes, such as biology, history and geography as well as the less obvious subjects in which aspects of health and nutrition appear.



*Communication*

Until the age of 16, the channels of communication with the individual are open. Once school days are over, formal points of interaction become much more limited, and confined to specialized bodies or professionals. This emphasizes the importance of equipping persons to make rational and sound decisions during the school years. In later life we are then presented with the need for nutrition education geared to behaviour change, rather than the initial adoption of appropriate behaviour, and this is always more difficult.

Since education in schools has not always been successful in equipping people to make wise decisions in relation to food and their health, it would appear that continuing work related to behaviour change is necessary. Our knowledge in this field indicates that it is the more personal inter-action which is most effective, while mass media propaganda serves more in the capacity of a reinforcing agent. There is no doubt a valuable contribution which large scale efforts can make, but this is unlikely to form a substitute for good groundwork on a person-to-person basis. Nonetheless, the filtration time between scientific discovery and everyday discussion of a topic has gradually shortened and daily events repeatedly require the expression of an informed view.

It is perhaps here that a community dietitian would have a particular role to play, since, as has been mentioned, the opportunities for personal communication tend to be more limited in early adult and middle life. Acting in conjunction with the health education officer, contacts might be initiated to meet the need for advice which so often finds expression through columns of local newspapers, 'phone-in programmes and the like.

With increasing age, the provision of caring services becomes more extensive and contacts through health professionals more likely. A food survey carried out in 1972 indicated that the elderly ate much the same kind of food as the general population, although in smaller quantities. Although most recommended intakes were met, intakes of vitamins were on the low side, and it was felt that vitamin D might need to be supplemented. The proportion

of subjects demonstrably malnourished was small; the report stressed that many among this age group are vulnerable and that their margin of safety may be slight. An investigation into the dietary of elderly women living alone indicated that intake could be closely related to health: those whose health was assessed to be worse than average had a poorer diet.

The panel on nutrition of the elderly emphasized the usefulness of regular visits from the community nursing team who could then advise the GP of those in need of a more detailed assessment. Special catering facilities for the elderly, such as meals-on-wheels, meals at clubs and day centres, are well established, but there is no doubt a need for an expansion of these arrangements.

#### *Useful Advice*

The very low dietary intakes of some of the old people in King Edward Hospital Fund Survey (1972) led the investigators to believe that advice on food, especially on what to buy with a limited income and how to store and cook it, would be useful for the house-bound and for many old people generally. However, in general, old people show very little interest in food and cookery. Food propaganda put out by the press, radio and television, or talks at old people's clubs seem to have very little impact. This once again reinforces the notion that education on a more personal basis is likely to be more effective. Since these studies were carried out, inflation has bitten more deeply into the resources of the old.

There appears to be a need for education in this area which could be met by coordination of existing facilities and the use of existing personnel. It is perhaps one of the functions of the community dietitian to act as a catalyst to the organizational change which would make this possible in a given area.

*Loopholes*

As we have considered the educational aspects of nutrition and health throughout life it becomes apparent that there is a role to be played by many members of the health care team as well as educators in a more academic setting. It is perhaps in this context that the greatest loopholes are apparent in the present system. Personnel with a prime function have not been adequately trained in this area. Although most schools still give nutrition a place in their syllabus, it is present to such a varying extent that it is doubtful whether a qualified Health Visitor without still further training could give more than general advice.

The timetable of today's medical student is already under such tremendous pressure from competing disciplines that a plea for the devotion of a greater length of time to consideration of the role of nutrition in maintaining health as well as in the aetiology of disease, is unlikely to be met with enthusiasm. However, since the doctor is so often placed in the role of educator in this field, there is surely a place in his training for the drawing together of the relevant strands from various disciplines, in a way that will enable him to communicate more effectively with respect to the role of nutrition in health.

*New Era?*

Another member of the health care team who has been mentioned is the Community Dietitian. This is perhaps the agent par excellence with the potential to usher in a new era of nutrition and health education. However, this potential remains as yet unrealised, and further appointments in this capacity should be encouraged.

Perhaps the most important area where consideration of the training of relevant personnel is required is that of teachers, in whose hands lies such an important opportunity and duty to lay the foundations of good food habits.

National statistics on obesity, coronary heart disease, dental health, food poisoning and other nutrition-related health disorders, indicate that a considerable amount of health education effort is required with a nutrition content. In many phases of life the opportunities for influencing behaviour are available, it remains to utilize these in a more effective way.

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A full list of references can be supplied on request.

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#### 20,000 RUN HIGGLER SYSTEM IN JAMAICA

Between 27-80 per cent of Jamaica's domestic food crops is handled by the higgler system which employs approximately 20,000 persons weekly.

According to an agricultural sector study, the higglers trade mainly through the Parish Council markets on a wholesale and retail basis.

This information is contained in a Ministry Paper, "Internal Marketing and the Agricultural Marketing Corporation," recently tabled in the House of Representatives.

- Jamaica Daily News  
13 September 1975.

## THE HEALTH PROGRAMME OF THE CARICOM SECRETARIAT\*

*by**Philip Boyd*

Under the Treaty Establishing the Caribbean Community one of the functions of the Secretariat is to study the health problems of the Region as a whole, prepare health programmes to deal with these problems and carry out other duties assigned to it by the Conference of Ministers Responsible for Health, who are now meeting annually as an Institution of the Community.

Since the Secretariat set up its Health Section just over three years ago it has developed a health programme based on policies laid down by the Ministerial Conference.

In this programme the Secretariat has been adopting in the main the preventive approach, because, as we all know, prevention is frequently inexpensive and treatment relatively costly.

*Priorities*

The first task has been to define the priorities. In this regard our conclusions can be stated very simply and briefly:

- (1) The greatest causes of sickness and death are poor sanitary conditions and the resulting communicable diseases; namely, gastroenteritis, dysentery and typhoid. In addition, cholera has now become a serious threat.

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\*This is the text of an address given to the Caribbean Association of Nutritionists and Dietitians in Port-of-Spain, Trinidad, 27 June 1975. Dr. Boyd is the Executive Secretary of the Caribbean Health Ministers Conference and Chief, Health Desk at the Caribbean Community Secretariat.

- (2) The chief dangers in the environment arise from insufficient and unsafe water supplies; insanitary sewage disposal comes second in importance. The other factors in the environment have a distinctly lower priority.
- (3) Mothers and children make up 65% of the whole population and are at special risk. This risk arises in part from the nutritional factor and also largely from the poor quality of services and the lack of family planning programmes.
- (4) Combined malnutrition and diarrhoeal disease in children under two years of age account for most of the deaths in this young age group but also for one-fifth to one-third of deaths for all ages.
- (5) 20 to 30 percent of all deaths in the Caribbean countries are due to communicable diseases, and one-third of these deaths are due to diseases that could easily be prevented by immunisation.
- (6) Venereal diseases are on the increase, and tuberculosis remains a major problem in some of the islands.
- (7) Diabetes and high blood pressure are common and are often undetected and uncontrolled until they give rise to grave complications that strike down adults at the height of their productive capacity.
- (8) Mental illness constitutes about one-half of the total volume of illness, and the mental health services are sadly deficient. Drug abuse falls under this heading, but in the Caribbean countries the most important drug problems are alcohol and tobacco smoking.
- (9) Diseases of the teeth and gums are universal, and the care of the mouth is seriously deficient. The dental services are given over to extractions and little is done for the conservation of teeth.

- (10) Nearly all the countries are infested with mosquitos that transmit yellow fever and dengue in populated areas. The virus that causes yellow fever is found in the forests of nearly all the South American countries and in two of our own.
- (11) There is a lack of community participation in health, and the majority of the countries do not have programmes in health education, which would procure that participation.
- (12) There are serious weaknesses in the management of the health services, in the availability of trained staff and in the supply and maintenance of the health care facilities. The cost of health care has become a serious problem.

#### *Programmes*

Let us now try to relate the health programme in the CARICOM Secretariat to the problems that it is designed to tackle.

We can conveniently discuss the programme under the following four headings:

1. Personal Health Services
2. The Environment
3. The Supporting Services
4. The Health Services

Let us deal first with the Personal Health Services. Under this heading we have to consider the maternal and child health services, including the prevention and treatment of gastroenteritis and malnutrition in the very young, the sexually transmitted diseases, diabetes, mental health and dental health.

One of the most important activities in the past twelve months has been the field of maternal and child health services. In January last year a historic meeting took place in St. Vincent at which some of these problems were reviewed and an important programme which we now know as SPACGEM (Strategy and Plan of Action to Combat Gastroenteritis and Malnutrition) was prepared. On 27-31 January this year in Antigua a multi-disciplinary group of specialists from various Caribbean countries was convened by the Secretariat and prepared a comprehensive maternal and child health plan.

The Conference of Ministers of Health, at their last meeting, accepted the Strategy and Plan of Action for strengthening the Maternal and Child Health Services that had been prepared in Antigua, asked each Member Government to designate a person or group to be responsible for its implementation, and selected for emphasis a number of components of the plan, such as the training and employment of auxiliaries, health education, including family life education, the promotion of breast-feeding, the execution of immunisation programmes and the provision of information and facilities for family planning. The Ministers also asked the Secretariat to arrange with PAHO for a coordinated programme of assistance to the countries to enable them to implement the plan.

The problem of diabetes is now recognised as a uniquely severe and costly one in the Region. A year ago the Secretariat convened a meeting of specialists in Port-of-Spain and now a Caribbean Committee has been set up on which the experts - national, university and PAHO/WHO will sit and prepare a regional programme that will include research, training and public education on this disease. As you know, CANDI has been asked to prepare material for the education of the public, especially to deal in a simple way with the dietary treatment of diabetes.

The Secretariat is now in the course of preparing a plan for the reform of the dental health services. The present public services in dentistry are devoted to mass extractions. There is every possibility that the Secretariat will be able to find funds to bring together the principal dentists and other interested persons to prepare a programme for the reform of the public dental services in the direction of prevention, restoration and dental health education.



*The Environment*

Let us now look at the Environment. In this part of its health programme the Secretariat is principally concerned with water quality, nutrition policy and the quality of drugs. In the Caribbean environment the dangers of unsafe drinking water supplies as a cause of outbreaks of gastro-enteritis, typhoid, dysentery and cholera are well-known, and so water quality control is a programme area of high priority, having significance not only for human well-being but also for social and economic development, for example, tourism. The Secretariat made a proposal about a year ago for a regional project on water quality control. In order to prepare this project, it is now proposed to convene early in 1976, in cooperation with the Caribbean Development Bank, PAHO/WHO and other agencies, a Caribbean Conference of Representatives of Water Authorities and Ministries of Health.

A factor in the environment to which we are also giving high priority is Food and Nutrition. The regional activity is of course centered mainly in the Caribbean Food and Nutrition Institute. We work closely with the Institute and have a high regard for the work it is doing. We are especially concerned to stimulate every Member Country to define its Food and Nutrition Policy not later than 1978 to ensure that such a policy brings together in each country the work of agriculture, education and health. The Secretariat is deeply involved in various aspects of work on the Regional Food Plan that was recently proposed by the Prime Minister of Trinidad and Tobago.

Let us turn now to the Supporting Services. Here the main concerns of the Secretariat are in Epidemiological Surveillance, the Quality of Drugs and Health Education. The importance of a system of vigilance against communicable diseases arises out of the fact that 20% to 30% of deaths in the Region are due to infectious and parasitic diseases and that about one-third of these deaths are due to diseases that are preventable by immunisation.

The Secretariat developed in the course of 1974 a plan of Caribbean Epidemiological Surveillance that was finally adopted by the Ministerial Conference a year ago. One part of the plan involved the setting up of a regional centre at the Trinidad Regional Virus Laboratory. This new centre -

The Caribbean Epidemiology Centre (CAREC) went into operation under the management of PAHO/WHO on 1st January, 1975. The centre is providing a wide range of diagnostic services and making plans to deal immediately with outbreaks of diseases. The Secretariat has received a grant of about TT\$600,000 from the US Public Health Service which is to be utilised especially for strengthening the laboratory and other surveillance services in the Less Developed Countries. There has now been a survey of the laboratory facilities in nearly all of the countries under this grant and we are expecting a series of requests from the countries for help with the strengthening of their facilities.

#### *"Ten Vital Questions"*

The Secretariat attaches great importance to the work of stimulating and helping the people of the Caribbean Community to decide for themselves what their most important health problems really are and feel responsible for doing something about them. There is no doubt that the health administrations in the individual countries are becoming increasingly aware of this need and are training staff to take part in this work. The latest activity of the Secretariat in this respect has been to recommend to Governments that they arrange for the "Ten Vital Questions on Community Health" to be discussed by health workers in every school and every teacher training college during the first week of July as a part of the programme for commemorating Caribbean Community Day. This proposal has now been adopted by the Standing Committee of Ministers of Education and by the Conference of Ministers Responsible for Health. But it should be a continuing activity.

The drugs used in modern medicine are complex, costly and potent and carry certain dangers. The Secretariat has been concerned to develop a specialised Regional Drug Testing Laboratory to perform microbiological and pharmacological testing of drugs which it would be uneconomic to carry out in any single country. Thirteen participating countries have just signed an agreement for the setting up of such a laboratory in Kingston, Jamaica, and the indications are that this project will now proceed quite rapidly.

The authorities in Jamaica have already taken the necessary steps to set up the building, and we have been promised help from PAHO and from CIDA for the specialist services and for equipment, respectively.

#### *Management*

A great deal of the Secretariat's health programme is really not directed to the health problems as such. Some of the most serious aspects of the situation are to be found in what we might call the infrastructure of health, i.e. in management, in the maintenance of health care facilities, in the numbers and training of staff, in the health laws and in the delivery and cost of health care.

The management of the health services is an especially critical area. At the request of the Secretariat PAHO began in 1973 a two-year programme of continuing education in management. One of the last of a series of seminars is soon to be held in St. Vincent on the theme "The Management System in the Maintenance of Health Care Facilities". It is already obvious that this programme is not the complete answer to our problems. To get dynamic and creative management in the health services requires an effort of considerable depth and intensity, and we frankly have not yet seriously directed our minds to achieving this either in the immediate future or in the longer term. The structure and character of the Caribbean society, except in Cuba, is such that it rewards those who go into private practice and penalises those who prepare themselves for and accept leadership posts in the health administration. We should make up our minds seriously to examine *all* the factors that relate to this state of affairs. The health services are really the equivalent in our countries of a major industrial enterprise spending up to one-sixth of the total Government budget; yet they do not have the managerial competence that they need. The individual countries and the Secretariat have a serious responsibility in this respect.

The Caribbean has been described as the graveyard of medical equipment. Firm action is needed to reduce the rapid rate of deterioration of health facilities and equipment. The Secretariat is engaged in developing, in

cooperation with PAHO and UNDP, a regional programme for the maintenance of health care facilities. At the recent Conference of Health Ministers it was decided that Trinidad should be the site for a regional centre.

As regards nursing, there is a certain dynamism in the air. The Regional Nursing Body has prepared an impressive Five-Year Plan. The Secretariat has convened a Working Party on Nursing Education which will consider the relevance of nursing education in CARICOM countries to the needs of the people of the Caribbean, the coordination of nursing education with the training of other categories of health worker, and the integration of nursing education into the general system of education of each country.

#### *Training*

The Regional Project for the Training of Allied Health Personnel (Paramedical) has received a tremendous boost from its recent approval by UNDP with a grant of nearly TT\$1½ million and a comparable sum from UNICEF. Substantial help is expected from other organisations, and there is to be an Inter-Agency Meeting in Port-of-Spain to coordinate the participation of these organisations as well as that of CIDA and of others who may be interested.

The Project is to be based on a network of educational institutions throughout the Commonwealth Caribbean. There is to be a College or Division of Health Sciences giving local training in each of the LDC's (Less Developed Countries) and five Regional Centres in the Bahamas, Barbados, Guyana, Jamaica and Trinidad and Tobago. The Regional Centres will train students from all the countries at a more specialised level.

The fields in which training is to be given cover a wide range of disciplines and include community health, environmental health, nutrition/dietetics, health education, medical laboratory technology, rehabilitation, health records, statistics and management. The Project will provide training at the community aide level and at advanced levels. In-service and continuing education programmes will be included.

Each Government will be required under the Project to designate an individual who as head of the College or Division of Health Sciences will be in charge of the programme of training within that country.

Such an educational project, giving many young people of the Caribbean an opportunity to prepare themselves to work in the health services, will confer far-reaching benefits on the people of the Caribbean not only in terms of individual well-being but also in terms of social and economic development.

#### *Legislation and Research*

The Secretariat has been deeply involved in Health Legislation, even though in matters to do with community health we rely more on education and persuasion than on the force of law. There is no doubt that administration requires to be backed up by law. The health laws of the countries are very much out of date, especially in such fields as mental health and food and drugs. Since 4th October, 1974, we have had a regional project in operation. The Adviser is Miss Yolande Bannister of Barbados, who has an office in the Faculty of Law at Cave Hill. When the Ministers met recently in Jamaica, she presented an impressive study of the health laws in the Region and suggested certain priorities. She will prepare model laws, especially for the Less Developed Countries, help with their implementation when requested to do so and thus try to bring up to date and harmonize the health laws of the CARICOM countries.

Finally, research. The Ministerial Conference has placed on the Secretariat the responsibility of trying to find funds for an important research project, namely, the setting up of a model of health care delivery. The proposal emanates from the Caribbean Medical Research Council. The model is to be divided among several of the countries, including St. Lucia and Belize, and will have as one of its aims the delivery and evaluation of a comprehensive service in which health promotion, prevention, treatment and rehabilitation are to be brought together. There is to be a considerable element of innovation.

Such then is the health programme which the Secretariat is trying to conduct and coordinate. Given its limited resources, there would be no hope of carrying out such a programme without ample help from other sources and especially from professional associations such as CANDI. The Secretariat is also receiving valuable help from numerous officials of the individual Governments, UWI, PAHO/WHO, the Caribbean Food and Nutrition Institute (CFNI), the Commonwealth Fund for Technical Cooperation, the Commonwealth Foundation, the Canadian Nurses Association, CIDA, UNICEF, UNDP, Project HOPE, and the US Public Health Service.

**CAJANAQUOTE**

*"Development in the first instance means the assurance of real well-being in the harmony of the smallest unit in Society that of the family unit. Both the help that is given, and the way in which help is used, should be directed towards this unit."*

*T. van Weelie*

*Foreword in Contact 23.  
October 1974.*

*Christian Medical Commission,  
World Council of Churches.*

## NEWSPAPER CLIPPINGS

*PLANS FOR REGIONAL LIVESTOCK COMPLEX - Imported meat bill too high  
From the Trinidad Guardian (Trinidad) 9 December 1975*

According to a CARICOM display of graphs and maps at the Tenth Regional CARICOM Heads of Government Conference in St. Kitts, the Commonwealth Caribbean spent \$172.5 million on meats and meat products alone in 1973. And the CARICOM experts gloomily warn that the total will rocket to over a billion East Caribbean dollars by 1980 if an action programme for a regional livestock project does not get off the ground immediately.

The region's total food import bill has already scaled the billion dollar (EC) mark and CARICOM Secretary-General Mr. Alister McIntyre is hoping that Caribbean leaders will become so concerned that they will give the green light for the next step in the livestock complex plan.

The billion dollar cost projection for meat imports in 1980 is a minimum one and is even misleading. The CARICOM planners have worked off the 1973 values without consideration to inflation and other critical factors.

Described as a preliminary design, since this exercise is merely to indicate the magnitude of the problem of the unnecessary drain of foreign exchange, the next steps will be project identification and pre-feasibility and feasibility studies.

The livestock project, part of an overall regional food plan, envisages massive expansion of cattle herds, dairy industries, the creation of some 26,000 new jobs in primary farming alone after 10 years, plus new agro-industries.

### *Expansion*

Planners promise that the livestock complex, far from cutting across national programmes, will be designed to complement development in the 12 countries that make up the Caribbean common market.

Assuming they had the go-ahead now, the planners speak in terms of expanding the dairy industry in Jamaica, for instance by 25,000 breeding animals by 1980.

They would also like to see the beef industry there producing 20 million pounds and the expansion of mutton and lamb by an additional 120,000 breeding animals.

In Belize, they envisage the beef herd expanding by 40,000 by 1985, and the eventual expansion of cheese and butter production for member states.

If all goes well the planners would like to see set up in the Less Developed Countries, tanneries for the sheep and goat skin, cottage industries to utilise wool and skins and facilities for sectionalising the packaging of poultry parts.

According to their projections, the vastly increased agricultural activity over ten years would mean an additional 13,000 dairy farmers, 7,000 sheep and goat farmers and 6,000 beef farmers.

Capital cost over the same period is expected to total some \$808 million - \$384 million (all Eastern Caribbean) in dairying: \$225 million in sheep and goats: \$193 million in beef and six million dollars in egg hatcheries.

A Secretariat official, beaming over the impact the chart presentation is making, admitted that the figures, present and projected, were frightening.

"But if we don't start now, we will be worse off tomorrow," he lamented.

The official went on: "We (the Caribbean) have tried industrialisation and that is so-so: We have tried tourism and we have found ourselves vulnerable depending still on outside financial patronage.

"Now we have this livestock complex which will not be subject to the vagaries of the international economic situation, recession, etc. Furthermore we'll be doing something for ourselves."



Based on a statement made by Trinidad and Tobago's Prime Minister Dr. Eric Williams some months ago, the planners will be relying on Trinidad to supply all the regional requirements for ammonia-based fertilisers. There will still have to be imports of phosphates and sulphates however.

The CARICOM planners feel that land is there waiting only to be utilised. They say that it requires only 537,010 acres to produce the beef, mutton, poultry, pork and related products and milk and milk products on which the region expended \$172.5 million in 1973.

Acreage required over ten years is estimated at 978,000 - 160,000 acres going to beef farms: 328,000 acres going to dairy farms, 298,000 acres going to sheep and goat farms and 192,000 acres for feed requirements.

Following is a breakdown of the country by country expenditure on imported meats for 1973:

Belize	\$10,073,459
Jamaica	\$42,939,782
Antigua	\$2,858,136
Trinidad	\$35,723,214
Grenada	\$3,587,653
Barbados	\$26,168,973
Guyana	\$9,845,234
St. Kitts	\$1,677,178
Dominica	\$2,505,555
Montserrat	\$659,348
St. Lucia	\$5,374,437
St. Vincent	\$4,408,423

*BRIGHT FUTURE FOR FISHING INDUSTRY*  
*From The Jamaica Daily News (Jamaica), 5 November 1975*

A bright future has been predicted for fisheries in West Central Atlantic countries.

A report of the West Central Atlantic Fishery Commission (WECAFA) bases its predictions on expanded interregional trade, import substitution and increased foreign exchange earnings.

The commission, which ended a meeting here over the weekend, said an advisory team from the fisheries department of the United Nations Food and Agriculture Organisation, found that possibilities for development of fisheries in the Western Central Atlantic were considerable, although not identical everywhere.

The report pointed out three main groups of countries - northern South America, the Antilles and the Caribbean coast of Central America.

The report recommended development of a trawl fishery for ground fishing in northern South America, while in the Antilles, immediate improvement of existing fisheries.

The advisory team proposed speeding up developing inshore fisheries by demonstrating commercial fishing with small mechanised inshore vessels.

Several delegations stressed the importance of improving post-harvesting facilities and techniques in small scale fishing communities, and the commissions secretariat advised that a multi-disciplinary fishery industries advisory unit should be established to assist in the orderly industry development.

The commission said prospects for fisheries development in the area were encouraging, as the region has fish stocks which could support increased catches.

It contended that planning and development activities could and should move forward within the limits set by resources estimates, and although knowledge might still be incomplete, fishery projects should go forward as part of integrated development plans.

"This could improve the relationship between small scale fishermen and the modern commercial fishery sector", the report said.

Pointing out that small scale fishermen contributed a major part of fish landings in many countries in the Western Central Atlantic, delegations stressed the need to give assistance to them to free them from poverty.

The commission found that several shrimp fisheries in the area were fairly or heavily exploited, but that with further development of the fishery on some resources and with adequate management of the fisheries, a moderate increase in the shrimp production of the area was possible.

Attention should be given to using the fin fish caught with shrimp, although there was no guarantee of finding a solution to make a combination of shrimp and commercial fin fishing economically feasible, the commission said.

The commission said there was need for more detailed knowledge about resources as a basis for fishery development and possibly management, and agreed to establish a working party on assessment.

The party is to restrict its activities to priority areas.

Evaluation of the lobster resources indicated, said the report that whereas in some areas - around Florida and off northwest Brazil - the lobster stocks appeared to be fully exploited, in most of the others the stocks might be able to sustain small to moderate increases.

*FOOD CROP GROWERS ASSOCIATION, the new term in agriculture  
From The Jamaica Daily News (Jamaica), 9 November 1975*

A relatively new term is making the rounds of agriculture nowadays bringing new hope to food crop growers.

The new term is "Food Crop Growers Association." It refers to the unification or coordination under one management of three steps in the process of producing, packaging and marketing of food crops.

Traditionally, production has been separated from any of the other processes. There has been little connection between the producers and the packagers.

But in recent months there has been a sharp trend towards coordination of these under management of the Jamaica Agricultural Society (JAS).

The management unit, the JAS and the individual farmers are held together by contracts made for them with the Agricultural Marketing Corporation (AMC) through their branch societies. Members of JAS, Jamaica Development Bank (JDB) and AMC staff told a meeting of over 400 food crop growers in Junction, St. Elizabeth recently, that this system was designed to benefit members and non-members of the JAS and would eventually lead to better financial rewards and improved conditions for small farmers.

According to the team, contracts made between farmers and the AMC would allow benefits which normally would not be forthcoming.

Mr. Hugh Miller, Chairman of the JDB told the farmers that \$10 million was available for lending to small and medium scale farmers under supervised credit.

The time for re-payment would be six years, and the JDB would require a small interest on the loan. However, as part of the plan for easing the burden of re-payment, no money would be taken from the farmer for the first two years of the loan. Re-payment would begin in the third year.

Mr. Miller explained that there was enough funds to accommodate 2,500 farmers. But funds would be issued in the form of materials rather than cash. At the same time farmers would be given technical assistance in the field by extension officers.

It was further explained that a request for a loan would require the farmer to show some form of collateral whether it be a registered or common-law title insurance or a guarantor.

Perhaps the most difficult question raised in this area was "If the farmer has no collateral can he get a loan." It was explained that crop lien could be used as security. This would however have to be recommended by the extension officer.

Some farmers feared that the poor quality fertilizer now being sold may lead to bad crop returns, and consequently difficulty in re-payment. They asked that the Bureau of Standards look into the fertilizer situation.

As one farmer declared, "Farming is our business therefore we must have proper equipment to get good returns to meet our debts."

Much of the discussions pointed to a willingness to unite and form a food crop growers association.

A meeting such as this has set the platform through which an association can be formed, and should be encouraged whenever possible.

A food crop growers association within the JAS is a wise move. There seems to be some element of impartiality here as farmers need not be JAS members in order to join. In this way a wider section of farmers could receive technical and financial help.

*IMPROVING CARIBBEAN AGRICULTURE - Regional solutions must be found  
From The Sunday Gleaner (Jamaica), 30 November 1975*

"Innovations for Improved Agricultural Marketing in the Caribbean" was the theme for a two-day seminar in Barbados, sponsored by Barclays Bank International Limited, and attended by those regional marketing executives who, in 1974 and again in 1975, participated in the "marketing exposures", also sponsored by Barclays, which took them on a three-week fact-finding tour of the United Kingdom's marketing undertakings.

Opening the seminar, Barbados' Minister for Trade and Industry, Senator Branford Taitt, revealed that, at the urging of regional governments, the Caribbean Community Secretariat, has obtained funds through the International Trade Centre in Geneva to undertake a three-year training programme in export promotion within the CARICOM area, and that another seminar on the subject of marketing had recently been held in St. Kitts as a result.

He also stated that Caribbean marketing executives are already discussing the possibility, with the appropriate persons in North America, of marketing essential oils, spices and fresh and processed fruit and vegetables there.

Highlight of the public opening session, however, was a forceful and entertaining address by Professor David Pickard, who held the Chair in Agricultural Marketing at Wye College, University of London, and who had much to do with the two "marketing exposures" already mentioned.

The message of Professor Pickard's talk was the need for regional marketing executives to find Caribbean solutions for Caribbean problems. An understanding of these regional food problems may be had from seeing what has happened in other parts of the world, he said, but the solutions must be essentially Caribbean, devised by Caribbeans, for the Caribbean's unique conditions.

Pickard pinpointed two main problem areas for official marketing organisations. The first, he said, was to decide just how far their role was purely a commercial one, and how far they had a social responsibility.

He wondered whether it was possible for the same organisation both to rationalise marketing systems and to be prepared to buy surplus to market needs at times of glut so as to keep up farm incomes.

#### *Careful Planning*

He stressed that he was not against keeping up farm incomes, but pointed out that marketing called for careful planning and organisation, and for strict adherence to grades and to agreements.

Said Professor Pickard: "A marketing corporation trying to dispose of surplus produce at a minimum loss would, however, be tempted to forget all this. Are the two roles compatible?"

The second problem, Mr. Pickard said, was to decide how far the territories should cooperate, and how far they should compete. His advice was that intra-regionally there should be competition; extra-regionally, there should be cooperation.

None of the territories, for example, had the volume of produce or the resources to market effectively in the European markets.

Another area for useful cooperation lay, he said, in the comparisons of operational costs between the different marketing corporations. This would allow marketing executives to learn from each other avenues of economies, and provide a useful exercise for all.

## NEWS BRIEFS

DIRECTOR LEAVES CFNI FOR WHO POST IN EGYPT



Dr. Robert Cook will be leaving his position as Director of CFNI on 20 January 1976 to take up duties as Regional Adviser in Nutrition and Maternal and Child Health Services with the World Health Organisation in Alexandria.

Dr. Cook, who has been at CFNI since his appointment as Medical Nutritionist in 1967, was Editor of *Cajanus* from 1968-72. In 1972 he was appointed Director, succeeding Dr. Derrick Jelliffe.

We wish Dr. Cook every success in his challenging new position, and to his wife and sons, a very enjoyable and fruitful sojourn in Alexandria.

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At the Xth International Nutrition Congress held in Kyoto, Japan, 3-9 August 1975, Dr. J. Alex Campbell, representing Canada and, until recently, on the staff of CFNI, was elected Treasurer of the International Union of Nutritional Sciences.

The new President is Dr. C. Gopalan of India and the new Vice-Presidents are Dr. N.S. Scribshaw of the U.S.A. and Dr. R. Buzina of Yugoslavia. The Secretary General is Professor B. Isaksson of Sweden.

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The first two seminars focussing on the follow-up of the implementation of the Strategy and Plan of Action to Combat Gastro-Enteritis and Malnutrition were held in Antigua and Dominica in December. The seminar team consisted of Dr. A.C.K. Antrobus and Dr. Miguel Gueri of CFNI; Dr. Dorothy Wilson, PAHO Zone Adviser in Nutrition; Professor David Picou; Head of the Tropical Metabolism Research Unit; and Dr. Wynante Patterson, Principal Medical Officer (MCH), Jamaica. Also attending was Dr. K. Richardson, the PAHO Country Representative.

In both territories there was good attendance by the technical and administrative members of the health staff. It was generally agreed that the main purpose of identifying obstacles to implementation and finding approaches to overcoming them was achieved.

These seminars are the first in a series to be held in the Less Developed Countries in the Commonwealth Caribbean and are funded out of the UNICEF Maurice Pate Award made to CFNI earlier this year.

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The Regional Pre-School Child Development Centre was formally opened in November by the Honourable Douglas Manley, Minister of Youth and Community Development, Jamaica, in the presence of other CARICOM Ministers attending a Regional Symposium on Social Development.

The Centre is situated on the Mona Campus of the University of the West Indies and incorporates day care facilities for 50 pre-school children. It will serve as a training centre for workers in day care from the Region as well as a research centre in child development.

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The Ninth Annual Meeting of the Advisory Committee on Policy to CFNI took place on the 26th and 27th November in Jamaica.

Attending the Meeting were representatives of the CARICOM Governments, the University Faculties of Medicine and Agriculture and of the United Nations agencies, viz. PAHO, UNDP, UNICEF, FAO.

The Institute's programme of work for 1975 was reviewed and its budget and plans for 1976 presented.

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Professor Hans Cremer, Director of the Nutrition Unit of Justus-Liebig University, Giessen, West Germany visited CFNI in December.

He conducted a seminar on Nutrition Education for the students on the Diploma in Community Nutrition Course, and gave a public lecture on Nutrition and Mental Development.

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Among recent visitors to CFNI were Dr. Mary Ann Anderson, Nutrition Adviser to CARE, New York; Dr. Victor Soler-Sala who recently assumed duties as Regional Representative for UNICEF in the Americas, Bogota, Colombia; and Mr. K.H. Silvert, Programme Adviser in the Social Sciences of the Ford Foundation, New York.

CAJANAQUOTE

*"It may well be that there are some men who seek not gold,  
but there lives no man who does not need salt which seasons all  
our food."*

*Cassiodorus, Minister to the  
Ostrogothic King of Italy.  
A.D. 500.*

*Quoted by R. Tannahill in  
"The Fine Art of Food."  
London: Folio Society 1968.*