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NUTRITION SOCIETY**

held in Pretoria on 12 - 14 April 1965

**HANDELINGE VAN DIE KONGRES
VAN DIE SUID-AFRIKAANSE
VOEDINGSVERENIGING**

gehou te Pretoria op 12 - 14 April 1965

MAIN THEME / HOOFTEMA

The Nutrition of Preschool and Primary School Children

Voeding van Voor- en Laerskoolkinders

MORNING SESSION — 12 April — OGGENDSITTING

Chairman/Voorsitter: *Dr. J. M. Latsky*

OPENING ADDRESS/OPENINGSREDE

F. W. QUASS

Problems of Nutrition

The detailed study of food and the role of the various nutrients in the living organism is a science of comparatively recent origin. Progress has been rapid, however, and in a few decades a vast amount of knowledge has been gained about the nutrient composition of foods, the functions of the individual nutrients and the actual requirements of human beings for these specific nutrients.

Every function of the living organism is dependent on the provision of nourishment and all aspects of human activity are affected by the state of nutrition of the individual or the population. The human being requires for maintenance and growth, besides protein, carbohydrate and fat, at least 10 important vitamins, 6 important minerals and several trace elements. The proteins and fats he eats must provide adequate quantities of 8 essential amino acids and at least 2 essential fatty acids.

The problem of estimating the nutritional requirements of the individual is greatly complicated by the lack of uniformity in dietary habits, body build, physical ability and physiological efficiency that characterizes apparently healthy human beings in all age groups. This same variation and the lack of long-term observations on individuals from different dietary, physical and other categories have made it impossible as yet to arrive at a satisfactory definition of what constitutes optimal nutrition—optimal, that is, in the sense that it will support and maintain optimal health, optimal physical fitness and optimal resistance to disease. It was largely with the object of arriving at a better understanding of the meaning of optimal nutrition and a better ability to distinguish optimal from sub-optimal nutrition that the National Nutrition Research Institute embarked on the series of nutrition status surveys with which it has been occupied in recent years. Reports on some aspects of these surveys will be read at this Congress.

If little can as yet be said with certainty about optimal nutrition, the same is not true of gross nutritional disorder, most of which has been very intensively studied and all of which can be readily identified. I propose to speak briefly about certain gross disorders of dietary origin that are sufficiently prevalent in our country to constitute a serious threat to the health of the nation. Some of these conditions are due to *underfeeding*, including deficiencies in respect of individual nutrients, others to *overfeeding*. In yet others the disorder is suspected to be due to *harmful substances introduced through the food*. Strictly speaking, the latter

are not nutritional disorders, but it is not unreasonable to consider them under the heading of nutritional hazards.

In contrast to the acute onset of most infectious diseases the onset of disease caused by faulty nutrition, whether due to *insufficiency*, *imbalance*, *excess* or *chronic poisoning*, is slow and insidious. For every case of nutritional disease diagnosed there must inevitably be numerous unrecognized early cases, besides numerous cases of nutritional disturbance which will never develop into frank nutritional disease.

The true extent of the occurrence of malnutrition in a population is therefore very difficult to assess. Equally difficult is the evaluation of nutritional status in different population groups, since the nutritionist is here confronted with the problem of defining optimum health and physical development and of distinguishing between the effects of faulty nutrition and the effects of heredity and other non-nutritional factors. These are problems which must be solved if nutritional disease and disorder are ever to be eradicated.

DISEASES OF UNDERNUTRITION

The diseases of undernutrition I wish to refer to are kwashiorkor and pellagra.

Kwashiorkor

Much publicity has already been given in this country to kwashiorkor, which can justly be termed the 'killer' nutritional disease of infants and young children. The disease is caused by a deficiency of high-class protein and an abundance of starch in the diet of infants and young children, a hazard to which they are exposed after weaning if access to milk or milk substitutes is restricted. The onset of the disease is insidious and the outcome in untreated cases invariably fatal. Even among hospital cases the death rate is high. A child suffering from kwashiorkor is a pathetic figure, bloated with oedema, disfigured by skin lesions and thoroughly miserable.

Kwashiorkor is particularly prevalent in indigent communities whose birth rate is high and whose diet consists mainly of cereals or other starchy staples. The incidence is undoubtedly very much higher in the remainder of the African continent than in South Africa, but is nevertheless high enough in this country to warrant serious concern.

Notifiable disease. In 1962, on the recommendation of the National Nutrition Research Institute, kwashiorkor was proclaimed a notifiable disease in South Africa. Since then an average of more than 1,200 cases a month, mainly

Bantu, has been notified, and it is clear that the notified cases can represent only a proportion of the total number of cases in the country.

With due acknowledgement to the authors in this advance communication, I would like to quote extracts from the paper to be presented to this Congress by Drs. P. M. Leary and J. E. S. Lewis,¹ on the state of nutrition of infants and toddlers in Sekhukhuniland:

'Figures do not exist for infant and child mortality rates, but from retrospective questioning of mothers of children admitted to the (Jane Furse Memorial) hospital it would seem that at least 50% of all children born alive fail to reach their fifth birthday and the majority of those who die do not reach their third birthday . . .

' . . . it is unusual to encounter nutritional oedema or other signs of frank malnutrition in children over four years . . .

'Among children attending schools in this area malnutrition is not seen. The provision of school meals obviously achieves its aim . . .

'It is our contention that malnutrition in this Reserve needs to be tackled primarily in the age group 9 months to 3 years where morbidity and resultant mortality, usually from kwashiorkor or infection, is highest . . .

'We contend that the reduction in child morbidity and mortality, with the saving of hospital expenses, and the ultimate increase in labour available for agriculture, industry, mines, etc. would make this step financially worth while.'

Pellagra

The second disease I wish to discuss, pellagra, is probably no less prevalent in this country than is kwashiorkor, but it affects a different age group. Young children with pellagra are sometimes seen, but the vast majority of sufferers are adults and adolescents. The disease appears to be due to a deficiency of nicotinic acid, a vitamin of the B group, and is particularly common in maize-eating communities. It is not unusual in the summer months to see pellagrous skin lesions in 50% or more of the patients who attend medical clinics in the Bantu reserve areas. In advanced cases with severe skin lesions and intractable diarrhoea, often accompanied by acute mental disorder and varying degrees of emaciation, treatment is prolonged and expensive. Pellagra accounts for a large proportion of all cases treated by mission hospitals in the country, and for no less than half to three-quarters of all Bantu admissions to the mental hospital in Pretoria. Its prevalence therefore constitutes a considerable economic liability to the country.

During 1960 a questionnaire was issued by the National Nutrition Research Institute to all medical practitioners in the country. The completed returns, which numbered only about 300, referred to a total of 200,000 patients. Among these, 4,417 cases of kwashiorkor and 3,132 cases of pellagra were reported.² In a similar survey carried out by the Department of Health in 1962,³ the high incidence of pellagra was again emphatically demonstrated, and there can be no doubt that this disease is sufficiently prevalent to warrant serious attention by the State.

The eradication of pellagra in South Africa would undoubtedly lead to lower costs of hospitalization and treatment by the State and to increased productivity in a considerable proportion of Bantu workers. No concerted drive against pellagra has as yet been initiated in this country, but intensive research is being conducted in Pretoria and elsewhere into the clinical aspects of the disease.

It is of interest to note that less than 4 ounces of groundnuts a day would supply enough nicotinic acid to safeguard an adult against pellagra. I wish to suggest that, before establishing a *national* anti-pellagra scheme, comprehensive and controlled field trials with a daily issue of groundnuts or with suitably vitamin-enriched maize meal be carried out in order to study the efficacy of such supplementation for the purpose of eradicating pellagra. At the same time, or following on the completion of successful field trials, pellagra could be made a notifiable disease.

I wish to point out that enrichment with vitamins is a simple matter, technically and technologically readily carried out in practice and relatively inexpensive.

DISEASES OF OVERNUTRITION

The diseases of *overfeeding* or excessive nutrient intake are, not unnaturally, most prevalent among affluent populations who can afford to indulge in their dietary preferences. This usually results in an excessive intake of fat and sugar, and frequently also of protein. In South Africa the annual consumption of sugar per head of population (all races) increased from 46 lb. in 1920 to 88 lb. in 1960, and there is a growing conviction among nutritionists that an excessive intake of sugar is as much responsible for the bodily ills that are characteristic of our affluent White society and those of other Western countries as an excessive intake of animal fats.

The most obvious of these ills is obesity or overweight, with all its attendant evils. Less obvious, but potentially more dangerous, is a number of other conditions of which degenerative disease of the arteries and diabetes are the most important. The former, when it affects the coronary arteries, exposes the victim to the constant threat of coronary thrombosis.

Coronary thrombosis accounts for more than a third of all deaths among White men of 45-70 years in most of our larger cities, but for only a very small proportion of deaths among Bantu men. Although it is appreciated that there are other factors operating in the development of arterial degeneration of which we know little as yet, there can no longer be any doubt that diet plays an extremely important part. Excessive food intake or an indiscriminating choice of food puts a strain on the body's ability to metabolize food, and the result may be a disturbance of the whole metabolism, with an accumulation of fats in the blood-stream and signs of an approaching diabetic state.

Abnormalities in the metabolism of carbohydrate and fat are found in nearly all cases of coronary thrombosis and appear to be already present in about 30% of healthy White men at the early age of 30 years. It has been established by the National Nutrition Research Institute that these abnormalities are gradually corrected when patients are placed on a low-calorie diet which is low in sugar and animal fat, and there is reason to believe that timely dietary restriction would greatly reduce the incidence of coronary thrombosis and other ills, as it would undoubtedly reduce the incidence of obesity.

Advisory Clinics

It is reported that in America hundreds of advisory nutrition clinics are to be established throughout the country in an effort to reduce the death rate from cardio-

vascular diseases. I believe that similar clinics should be established in the larger centres in South Africa to assist medical practitioners and practising dietitians with the diagnosis and treatment of nutritional disorders. The assistance would take the form of providing facilities for clinical and biochemical tests and prescribing dietary control, and such clinics would help to reduce the present high death rate among the most important labour force in the country, viz. the irreplaceable 'white collar' executives and professional men. It is my impression that the average general practitioner sadly neglects the task of correcting unsatisfactory and even definitely unhealthy dietary habits in his patients.

TOXICITY AND FOOD HYGIENE

The third group of nutritional hazards I wish to refer to are those associated with the presence of harmful substances in the ingested food. We are all familiar with the term 'food poisoning', usually applied to an acute and sometimes fatal illness caused by eating food contaminated with bacterial toxins. It is probably less widely appreciated that poisoning may also result from the prolonged use of foods containing substances which are not recognized by the consumer to be toxic because they have no immediate effect. The public is protected by food regulations from being poisoned by harmful substances added to food as preservatives, colouring matter and so forth. The possible harmful effects of yet another group of substances, the insecticides, are at present under review by a Committee of Enquiry appointed by the Minister of Health.

Within the last few years, however, nutritionists have become aware that health hazards may exist in a hitherto unsuspected quarter, namely the cereals and other plant products which form the dietary staples of a large proportion of the world's population. In South Africa the population group most likely to be affected by this hazard is the Bantu with their high maize intake.

The Bantu as a whole present a very unsatisfactory picture in respect of the state of health of the liver. Accumulations of iron in the liver are the rule in Bantu men of 40 years and over, and liver-function tests show abnormalities of varying degree. Furthermore, in common with certain other populations, such as the rice-eating communities of the East, the Bantu show an extremely high incidence of primary carcinoma of the liver, a highly malignant and invariably fatal disease which occurs in children as well as in adults. In Whites, primary liver cancer is extremely rare. The Bantu have also developed in recent years a greatly increased incidence of oesophageal cancer.

The reason for the Bantu's marked susceptibility to these various disorders is unknown. Different factors have been suggested as playing a part in the development of the various disorders, such as malnutrition in childhood and the ingestion of abnormal quantities of iron derived from iron cooking pots. The suggested explanations have not been very satisfactory, however, and much interest has therefore been aroused by the recent discovery that many common moulds previously thought to be harmless are capable of producing toxic substances which cause acute liver damage and sometimes liver cancer in experimental animals. These moulds commonly attack stored

grain and other plant products, especially under humid conditions, and in a recent survey conducted by the CSIR Research Group for Microbiology, toxic moulds were recovered from about 30% of a series of first-grade mealie meals tested.⁴ This does not mean, of course, that the meals contained dangerous quantities of toxic material, but it does mean that they contained fungal spores or threads capable of proliferating under suitable conditions and rendering the meal unfit for consumption.

The possibility that fungal toxins might be concerned in the development of liver disease and cancer of the liver and oesophagus in the Bantu is now the subject of intensive and widespread investigation. Regulations have already been promulgated in South Africa to protect the consumer from products contaminated with aflatoxin, the name given to the first group of mould toxins isolated, as well as other toxic mould metabolites.

NUTRITION POLICY AND RESEARCH

An appraisal having been made of some of the nutritional hazards confronting our population, let us now consider the nutrition policies of the State and the measures being taken to combat the dangers and overcome the deficiencies.

I should like to refer to the report of the Committee of Enquiry Regarding Human Nutritional Matters (hereafter called the Mönning Committee—1958) which was tabled in Parliament in 1959.⁵ The Committee consisted of Dr. H. O. Mönning (at present Science Adviser to the Prime Minister) who acted as Chairman, Prof. A. I. Malan (at present Deputy Speaker of the House), Dr. P. W. Vorster (at present Secretary of the Department of Agricultural Technical Services) and Dr. J. M. Latsky (Chief State Nutrition Adviser) who acted as Secretary.

The terms of reference of the Committee prescribed by the Honourable the Minister of Health commence as follows: 'I give you a free hand to report on any aspect of human nutrition and its attendant problems . . .'

I want to quote some of the recommendations made by this Committee, which to my mind constitute even today a sound formulation of a State nutrition policy and could pertinently direct the country's nutrition research. Many of the Committee's recommendations have been and are being implemented; others have been neglected, and it is my purpose to reopen some of these issues.

Recommendations

The following are the recommendations I want to bring to your attention:

Para. 143(i). That, to begin with, an investigation, accompanied by any necessary research, be carried out in order to obtain more complete knowledge of the *basic nutritional requirements of the various age, racial and regional groups of the population* under South African conditions;

(ii) that surveys be made of the nutritional status of population groups in which under- or malnutrition is specifically expected, together with a thorough general investigation of factors such as housing, clothing and exposure to cold, excessive work (especially by children), *unhygienic conditions* and infestation with parasites, *metabolic diseases* and even psychological factors—each of which, with or without deficient nutrition, may play a part in the nutritional condition of individuals and groups;

Para. 145. That further research into the possibility of *enriching maize meal effectively* be pursued unremittingly—especially with milk powder and fish flour;

Para. 146. That, apart from maize meal preparations, research also be carried out in respect of the possible production of other special or enriched foods, particularly with milk (or milk powder) and fish flour, or similar available high quality foods.

Para. 147(a). That better use be made of the State's subsidies for food, with the object of directing more effectively the dietary habits of especially the less-privileged

population groups, and of giving special preference to unrefined, natural foods; that the subsidies on white bread and highly refined maize produces be therefore completely or partially withdrawn; that 'brown bread' (to be defined in greater detail) be made the cheapest bread through subsidization; also that the use of milk and certain other dairy products be actively encouraged.

Para. 147(c). That above all, as far as is reasonably possible, subsidies be used preferentially for unrefined natural foods, especially 'brown bread' and (as nearly as possible) unrefined maize meal.

Para. 150. That the National Nutrition Research Institute be the proper agency to conduct research and surveys with regard to nutrition (see also para. 152) and, especially in the case of surveys . . . in collaboration with . . . the Department of Health.

Para. 152. That in respect of nutrition research, use be made of suitable persons and facilities at universities to conduct in particular *basic* research in order to stimulate the training of research workers in this sphere.

Accepting these recommendations as the nutrition policy of the State, I will now attempt to analyse the successes and failures and suggest modifications where possible and logical.

FOOD SUBSIDIZATION IN THE REPUBLIC OF SOUTH AFRICA

The following are the estimates made by the National Marketing Board for the year 1964/65 in respect of *direct* subsidization by the State of the following 3 food items:

Wheat	.....	R14.86 million
Maize	.....	R10.20 million
Dairy products	.....	R 4.55 million
Total		R29.61 million

The subsidization of food by the State is certainly a worthy cause and, to my mind, a major factor in the effort being made to combat malnutrition in South Africa, but when we scrutinize the present situation we are confronted by certain anomalies.

For instance, the greater proportion of the subsidy for wheat is probably being spent on white bread made of relatively highly refined flour. I fully realize that the subject of white bread is political dynamite. I would certainly not suggest that white bread be withdrawn from the public, but I do believe that it is completely unreasonable and not in the best interests of the community to subsidize white bread.

In 1964 637 million 2-lb. loaves of baker's bread, of which 414 million or two-thirds were white, were sold in the Republic, compared with 592 million loaves in 1963, of which 378 million were white. This represents an over-all annual increase of 7.6%, the increase in white bread consumption being 9.6% and that in brown bread consumption only 4.1%. (The population increase was about 2%.) Do these figures indicate any success 'in directing more effectively the dietary habits of especially the less-privileged population groups, and of giving special preference to unrefined, natural foods'? Certainly not!

If we assume that the R15 million made available for the subsidization of wheat is applied to baker's bread only, it follows that in 1964 every 2-lb. loaf of bread was subsidized by 2½c. This is an over-estimate, however, a better figure for the subsidization per loaf being probably in the order of 2c. If now the 2c subsidization per loaf were to be discontinued in respect of the 414 million loaves of white bread sold, there would be a 'saving' of some R8 million. Surely this money would be far more

effectively used if it were made available for the subsidization of brown (and wholewheat) bread or if it were canalized to lower the cost to the consumer of the more urgently needed dairy products, particularly milk, skimmed-milk powder and cheese, and of meat and other 'protective' foods?

According to the Maize Industry Control Board the following quantities of maize meal were sold during 1963/64, mainly for human consumption:

(i) Unsifted maize meal	.....	3.49 million bags (200 lb.)
(ii) No. 1 whole maize meal	.....	0.19 million bags (200 lb.)
(iii) Sifted granulated maize meal	.....	5.21 million bags (200 lb.)
(iv) Special sifted granulated maize meal	.....	5.22 million bags (200 lb.)
(v) Degermed products (samp, mealie rice, baker's cones, etc.)	.....	2.40 million bags (200 lb.)
Total		16.51 million bags (200 lb.)

This represents an average maize meal consumption per head (all races) of practically 1 bag (200 lb.) per year, or 9 oz. per day.

We could make calculations similar to those made for bread in respect of the subsidization of the finer and degermed grades of maize products and we would probably here also be able to 'recover' a few million rand in subsidies for diversion to food products nutritionally more deserving of such support, e.g. the coarser grades of maize meal.

FOOD CONSUMPTION STATISTICS

Dairy Products

The following was the milk consumption in South Africa during 1963/64:

Milk as fresh milk (i.e. 14 gallons <i>per caput</i> per year)	.....	245 million gallons
Milk processed into butter	.....	185 million gallons
Milk processed into cheese	.....	35 million gallons
Milk processed into condensed milk and milk powder	.....	34 million gallons
Total		499 million gallons

The consumption of milk for all purposes is therefore in the region of 500 million gallons, or about 0.7 pints *per caput* per day, undoubtedly an inadequate figure. My plea last year, when I opened the Agricultural Show at Ottosdal—that the dairy herds of the country be increased by at least one million cows, was therefore definitely justified.

Kwashiorkor and Milk Supplies

Measures so far taken to combat kwashiorkor in this country include, besides years of intensive research into preventative and curative aspects, the inauguration by the Government of a scheme for the distribution of skimmed-milk powder.

I am indebted to the Chief State Nutrition Adviser of the Department of Health, Dr. J. M. Latsky, for the following data pertaining to the State-subsidized skimmed-milk powder distribution scheme for the year 1964:

(i) Total annual expenditure, i.e. funds available for subsidization during 1964	.....	R65,000
(ii) Number of local authorities participating in scheme	.....	103
(iii) Skimmed-milk powder distributed (i.e. subsidized @ 5c per lb.)	.....	1,300,000 lb.
(iv) Total number of children benefiting from scheme (each receiving 1 lb. per week for 13 weeks, i.e. for 3 months)	.....	100,000

It is assumed that after 3 months the children have benefited sufficiently and thereafter they no longer 'qualify' to receive milk powder under the scheme unless a medical officer specifies that further supplies be issued to the child.

There can be no doubt that the milk powder distribution scheme and its attendant publicity and nutrition education have caused a great increase in the sale of skimmed-milk powder among the Bantu, and that this is a major reason why milk powder supplies in the Republic are running short, necessitating considerable importation.

I would emphatically recommend a considerable extension of the milk powder scheme. However, since there are probably some 2 million non-White children in the Republic in the age group 1-4 years, it is obvious that the local milk powder supplies cannot possibly cope with the problem of kwashiorkor in this country. Other high protein foods must therefore be made available at very low cost. A product which immediately comes to mind is fish flour, which, when supplemented with vitamins, has been shown, both here and overseas, to be very effective in the treatment and prevention of kwashiorkor.⁸

The National Nutrition Research Institute also favours the introduction of cheap food mixtures that can be used as milk powder substitutes.⁷ The Institute has itself formulated a cheap concentrated food that can be combined with mealie meal to form a nutritious feed for infants or any other age group. Full details of this supplement will be made available during this year.

The statement of Drs. Leary and Lewis¹ emphasizing the greater nutritional problems of toddlers, together with the above figures indicating the low milk availability of the Republic, bring into perspective the ill-judged proposal made in Parliament in 1964, with which the National Nutrition Research Institute had to deal, viz. that all maize meal made available to the public be enriched with milk powder. In this case we are not dealing with easily practicable enrichment, as in the case of synthetic and stabilized vitamins, but with bulk enrichment with spoilable products. If fortification is to be rational it must be designed to satisfy an established need, otherwise the measure is very likely to be wasteful.⁹ We need all our milk powder for the toddlers vulnerable to kwashiorkor—mainly Bantu—and we certainly should not 'waste' any of this wonderful food on the children and adults of the privileged classes.

Poultry and Eggs

It would seem to me that an extension of the poultry industry for the purpose of producing more eggs and poultry meat could be undertaken to the great advantage of this industry and the South African consumer. I am sure that we would have more success in the local marketing of eggs if the necessary nutrition education—to encourage the Bantu in particular to eat more eggs—were undertaken. In view of the steady increase in the price of beef and mutton, poultry meat is bound to become more and more generally used.

I am informed that the poultry industry in this country is not as advanced, agriculturally speaking, as it might be, and that with the introduction of overseas techniques, particularly in respect of breeding and feeding practices, lower-priced eggs and poultry meat could be made available in this country to great national and nutritional advantage.

Butter and Yellow Margarine

It came as something of a shock to me to discover recently that the State had to import in a single year as much as 9,500 tons of butter at a cost of R7.6 million. Undoubtedly the severe droughts of the past years have affected the level of production in the country. The Dairy Industry Control Board is nevertheless particularly pleased with its campaign for increased butter consumption by the Bantu and has lately reported that the Bantu insist on buying the best grade of butter and are not satisfied with the ordinary cooking grades. Greater consumption by the Bantu must be taken as a major reason for the increased demand for butter.

On the other hand, the average consumption of fats and oils (including butter) per head of population is very low in this country. The popularization of margarine and the promotion of its sales are hampered by the fact that it cannot be

coloured to a 'natural' yellow or mixed with butter. The production thereof is also restricted. Food technologists have shown that the admixture of butter with margarine enhances both the appearance and the taste of margarine. Such a mixed product would, to my mind, increase the consumption of both butter and margarine in the Republic.

The Dairy Board opposes the colourization of margarine. In view of the low average fat intake of the South African population and the considerable amount of foreign exchange spent to import butter, one can only ask 'Why?'—and perhaps venture to quote an old adage: 'Live and let live'.

POPULATION ESTIMATES AND FOOD SUPPLIES

It would seem that every time a new estimate is made of the total population of this country at the end of the century, the figure is higher. I remember well that some 15 years ago the figure was in the order of 30 million. In the early 1960s the figure had increased to 35 million and now—according to an article in the first issue of the *South African Journal of Nutrition* by the esteemed Chairman of our Society, Dr. F. W. Fox¹⁰—we are presented with the startling figure of 42 million.

There can be no doubt that it is time that we reviewed the agricultural potential of this country in the light of the present population growth estimates, and one wonders whether completely revolutionary methods for increasing agricultural production will not have to be considered.

Increasing Agricultural Production

I will attempt to suggest some such possibilities:

I have no doubt that the possibility of desalting sea water by the application of atomic energy and the transport of the resultant fresh water by pipelines to the inland for municipal, industrial, and irrigation purposes will in due course receive consideration and may well become economically practicable. I foresee that vast stretches of this country would then be changed from semi-desert into a green paradise. The introduction of adequate irrigation to the great Springbok Flats, for instance, would result in a tremendous increase in the production of food.

There are vast tracts of bush country which are relatively unproductive. Should we not consider the eradication of this seemingly useless shrub and scrub vegetation and plant, say, nut and olive trees without unduly disturbing the ecology of the areas? But let us not repeat the disastrous groundnut scheme of Central Africa in the early 1950s. I realize that the Bushveld has a very low rainfall, but many of these nut and other specially cultivated trees are resistant to drought conditions.

If we were to plant deciduous fruit trees, citrus, olive, nut, avocado pear and indigenous fruit trees (e.g. marula)—the whole range of temperate to sub-tropical fruit trees can be considered—on the sidewalks in front of our residences in our White and non-White cities and towns, we would still have beautiful trees to look at and yet have at the same time a source of additional food.

Establishment of Food Banks

Whenever we have serious summer droughts in the Bantu Homelands, as we have now had for several consecutive years, the food position deteriorates as the winter progresses. In the Transvaal the Agricultural Union has recently established a fodder bank to assist cattle farmers in the feeding of their animals. I believe that the Bantu Homelands should also establish food banks.

I think that to start with the products stored in these banks should be maize (in the grain), skimmed milk powder and possibly dried or tinned meat. These banks would serve a valuable purpose in any other emergency also, such as an attack by enemy forces, when it would be of advantage to converge the rural non-White populations around such focal points in order to prevent the type of panic and disorder that now prevails in parts of the Congo.

Levies on Staple Foods

The need for research on food and feeds so as to equip the State with all possible knowledge that may be necessary for the establishment of a sound nutrition policy is becoming more and more urgent. But research is also becoming more and more expensive, and it is difficult today to obtain the necessary funds for skilled personnel, their equipment, and the buildings needed to house them.

I suggest that levies be imposed on all staple foods—maize, wheat, milk, kaffircorn, meat, fish, fruit and vegetables to provide funds for this purpose.

A step in this direction has already been taken. As the result of a levy on the profits of all *factory-brewed* Bantu beer (totalling some 120 million gallons in 1964) a sum of more than R100,000 will be raised annually for purposes of research on and standardization in relation to Bantu beer and kaffircorn.

The extension of the levying principle to other staple foods should be urgently considered.

Need for Dietitians

In the course of the nutrition status surveys undertaken by our Institute among the primary school children of all races in Pretoria, the 'unscientific status' of dietary surveys was again forcibly brought to my attention. The other studies involved in such surveys are carried out with greater ease and are more reliable.

One reason for the difficulties experienced in dietary surveys is that a dietitian almost literally has to live under the same roof as the experimental subject in order to make a correct appraisal of the food intake of the subject concerned.

At the Congress in Durban in 1963 I pleaded for more dietitians and also for dietitians from all our racial groups.¹⁰ I also wish to emphasize the very urgent need for *male* dietitians.

RECAPITULATION

I have made—in the order given—the following recommendations and suggestions:

1. That comprehensive field trials with a daily issue of groundnuts or with vitamin-enriched maize meal be conducted in order to study the efficacy of such supplementation in respect of the eradication of pellagra, and that serious consideration be given to the question of making pellagra a notifiable disease.

2. That clinics be established throughout the country to assist medical practitioners and practising dietitians in the assessment of the clinical, biochemical and dietary status of their patients.

3. That in line with the recommendations of the Mönning Committee (1958), the subsidies on white bread and special grade maize meals be completely abolished and these funds used for further subsidization of brown (and wholewheat) bread, the less refined grades of maize meal and also milk and dairy products.

4. That the cattle farmers in the Republic be encouraged,

through financial and price support measures, to increase their dairy herds by at least one million cows.

5. That the State-subsidized skimmed-milk powder scheme be considerably extended.

6. That other cheap concentrated foods, approved for that purpose by the National Nutrition Research Institute, be introduced under the milk powder scheme.

7. That the yellow colouration of margarine be permitted, in order to encourage a greater average fat intake.

8. That the systematic planting of fruit- and nutbearing trees in urban and rural areas be encouraged.

9. That the establishment of food banks in the Bantu Homelands be given serious consideration.

10. That levies be imposed on all staple foods in order to finance the relevant agricultural, food technological and nutritional research and standardization.

11. That dietitians in all population groups be trained and that *men* be encouraged to make dietetics a lifetime career.

FINAL CONCLUSION

It is unfortunate that owing to the gaps in the nutrition policy of the State, the recommendations of the Mönning Committee have on the whole not been implemented or have been, in fact, ignored, to the detriment of the nutritional status of the population of the Republic.

Possibly the main reason for this situation is to be found in other recommendations of the Mönning Committee and particularly the recommendation calling for the dissolution of the erstwhile Department of Nutrition and the transfer of the State's 'nutrition' activities to the Department of Health and Agricultural Technical Services.

This separation has caused a weakening of the efforts aimed at improving the nutritional status of the population—in fact, nutrition has been treated like Cinderella by the two sister organizations. The Department of Health consistently disclaims any responsibility in regard to the assessment of the nutritional status of the various age, racial and geographic groups of the country, and the Department of Agricultural Technical Services is necessarily more concerned with the nutrition of animals than of man!

My final and most urgent plea is therefore for the re-establishment of a Department of Nutrition to determine and maintain a sound nutrition policy and so improve the health and welfare of all population groups of the Republic of South Africa. Among the tasks of this Department would be to spend public monies on the subsidization of food to the best possible nutritional and national advantage and to impose levies on the major staple foods of the country in order to finance urgent agricultural, food technological and nutrition research and the standardization of food products.

I hope that by thinking aloud I have provided you with further 'Food for thought'.¹¹ The time for thinking is drawing to a close, however; it is now the time for action.

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