SOME ASPECTS OF BANTU NUTRITION IN RELATION TO HEALTH AND DISEASE.

RALPH E. BERNSTEIN.

The physical well-being of a nation is dependent on two factors, heredity and environment. It is well known that the most important environmental influence to which any nation is subjected is food. Food enters more closely and intimately into the metabolic processes and affects them more profoundly than any other external influence. It is generally recognised that a suitable food supply and its rational utilisation are of cardinal importance in maintaining the health and efficiency of the community.

Never before in Bantu history have the people been better supplied with food from which satisfactory diets can be constructed. Yet, in spite of this, the entire rural and urban population, excluding those under European supervision on the mines or as servants, is content to subsist almost exclusively on a limited and badly balanced dietary seriously deficient in vitamins, protein, fat and mineral constituents. The reasons for this deplorable state of affairs are:—firstly, ignorance of dietetic laws; secondly, established habits and tastes which are in conflict with present physiological knowledge; and, finally, the most important factor rests with the poor economic position of the Bantu.

Survey of the Economic Conditions Amongst the Bantu.

The report published by the Native Economic Commission (1925) established that the annual family (unit of five) income of nearly sixty per cent. of the Bantu population fell between £9 and £36. In the Transkei, where rural conditions are not so harsh as in the Western Cape, O.F.S., and the Transvaal, the annual income for the family unit is £29 5s. 0d., of which £13 10s. 0d. and £12 are expended for food and rent respectively, while the remaining sum is expected to cover taxes and necessities. In the urban areas, conditions are no better. The Johannesburg Joint Council of Europeans and Natives (1927), in an enquiry into the economic conditions prevailing amongst the Witwatersrand Bantu, estimated the monthly budget of a family of five at £6 to £6 10s. 0d., of which £2 17s. 6d. has to be spent on food. Oreinstein, in evidence before this enquiry, stated that the lowest cost of a diet consistent with reasonable health for a family of four was in the neighbourhood of £3 a month.

The evidence shows that, at best, such food budgets are on the borderline of safety between health and disease, and that a very slight deficiency in any of the essential dietary constituents might cause an important shift of balance in the wrong direction.

The Bantu National Diet and its Deficiencies.

The notoriously deficient and unbalanced Bantu national diet is the inevitable concomitant of poverty. Throughout the whole of South Africa the staple article of diet of the Bantu masses is a cereal—maize or kaffircorn. Biological tests have shown that these cereals possess a low nutritive value, and constitute an inadequate food, especially when refined, e.g., mealie-meal (Stammers, 1925). All these cereals are deficient in the following food constituents:—suitable protein, fat, phosphorus, iron and certain vitamins, particularly B2, C and D (Fox, 1934). Although wheat, a cereal of high nutritive value, is cultivated by the natives to a considerable extent, it is rarely used as a food, but sold because of the high price it commands.

The predominant vegetarian (cereal) character of the Bantu diet cannot but impress us. This excess of carbohydrate cereal starch is found by Mellanby (1934) to have a deleterious effect on the human body, due to the presence of certain toxic substances. Cereals, particularly maize and kaffircorn, are relatively cheap, abundant, excellent sources of energy, and consequently tend to bulk large in the Bantu national diet, while the more expensive, dietetically valuable foods, such as meat, eggs, fruit and fresh vegetables, are only irregularly obtained. In times of drought milk and fresh vegetables disappear entirely from the diet. The Bantu, in regarding their cattle as a source of wealth available only for “lobola” and ceremonial purposes, are depriving themselves of an excellent source of animal protein, fat, and vitamins. It is generally accepted that a vegetarian diet is less satisfactory than a good mixed diet.

The Bantu diet, therefore, suffers from an inadequacy of protein of high biological value, an excess of carbohydrate especially cereal starch, and an insufficiency of minerals and vitamins. Is it any wonder that race deterioration is taking place; that the infant mortality rate is high; and that disease levies so great a toll on the people? The lack of fat, too, plays an important rôle in the prevalence of pneumonia and tuberculosis amongst the Bantu. The first aspect of nutrition in South Africa, viz., “Is the Bantu national diet likely to maintain physical health and efficiency?” has been answered in the negative by the mine authorities. The regulation diet supplied to the mine labourers consists of mealie-meal, supplemented by wheaten bread, meat, vegetables, germinated beans and peas, sugar, etc., so that, provided the native makes use of these additional
substances, a reasonably balanced diet adequately supplied with vitamins is obtained. The rural natives, undernourished and of poor physique, return after nine months hard work on the mines with bodies shining with health—the result of an enlightened diet.

In short, the present day diet of the Bantu lacks the variety and protective substances of that of their ancestors, who did not have to contend with the evils of overcrowding, artificial values of primary commodities, and the ruthless domination of the European. Further, in the poorer Bantu classes and in times of drought, a stage is reached when the diet mainly consists of cereals (energy-providing foods), and it may not provide enough even of these; undernutrition is then added to faulty nutrition—a state in which thousands of Bantu exist for the greater part of every year of their lives.

The Influence of Faulty Nutrition on Health and Physique.

Manifestations of undernutrition and faulty nutrition are thus a common feature in our Bantu population. Starvation, startling as it may appear, is rife in the native territories, since even in times of prosperity, the native's harvest is insufficient for his needs (Public Health Report, 1934). The mere scantiness of food is in itself a matter of very serious moment, and the direct causation of poor physique and a strengthening factor in the associated causation of disease. The effect of undernutrition is evidenced by the high proportion of thin, emaciated natives of poor physique, presenting themselves at the recruiting stations after a poor harvest, and the fact that the mine authorities “feed up” their recruits before they are put on shift underground. The idea that the Bantu generally have a physique far superior to the European is entirely erroneous; the physique of the Bantu mine recruits is on a par with the standard accepted for the S.S.B. A Commission of Enquiry (1928) reported that one-half of those presenting themselves to the examining doctors for mine work are, owing to poor health and physique, rejected. This percentage is disquieting, because many of the defects from which they suffer are malnutritional in origin and are preventable.

The physical condition of the Bantu is clearly related to their tribal origin and the part of the country from which they come. The southwestern tribes have intermixed with Bush-Hottentot stock more intimately than did the Bantu in the northern and north-eastern areas, and this probably accounts for the poorer physique of the former to some extent. Further, the varied conditions of climate, rainfall, irrigation and soil prevailing throughout South Africa make the eastern areas of the country more suited to pastoral and agricultural activities than the drier western areas. This is reflected in the observed decline in the nutritive value of the Bantu national diets from east to west. Accompanying this fall there is a decline in stature, body-weight, stamina and physical efficiency of the people. Indeed, nothing could be more striking than the contrast between the manly, stalwart and resolute races of Natal—the Zulus and their tribal offshoots—and the poorly developed, toneless and supine people of the west. The poor physique and race deterioration of the Bechuana is ascribed by Dyke (1933) to nutritional defects during the years of growth. He reports that children at tribal schools have one meal per day, consisting of maize porridge with perhaps some tea, and seldom anything else. There is no variety or balance in their diet, except during the summer months, when they go to the cattle-posts (milk, wild spinach, green maize, pumpkin). In evidence before the Native Economic Commission (1930-32), Brodziak stated regarding Bechuana physique:—“You will see malnutrition stamped on the race,” while Neethling, in reference to Transvaal natives, said:—“We have so many kafrs that are just shadows.”

There is no need to stress the all-important influence exerted by food, and particularly protein, in determining the degree of muscular development, the general physical endowment, the powers of endurance and resistance to disease, and, most important of all, the place a tribe or race has won for itself in courage, progress and constructive work. The role of diet in the determination of health and physique has been studied by McCarrison (1932) in India. He points out that the most nutritious Indian national diet is used by the warrior Sikhs and Pathans, while the lazy, small and weak Bengali subsist solely on a rice diet. This receives confirmation from the conditions observed by Orr and Gilks (1930) for two East African tribes—the Kikuyu and the Masai. The vegetarian Kikuyu are in every way inferior to the meat-eating Masai. It is obvious that conditions among the Kikuyu and Bengali approximate closely to those seen in the Bantu.

Throughout it seems that the wife and children are likely to suffer more than the man who must preserve his physical efficiency as a wage-earner. The necessary adjuvants are often lacking in the diet of pregnant and nursing mothers and young children. This is probably an important factor in the high infant mortality rate (in the locations there are reported statistics of 300 to 650 deaths per 1000, while a conservative estimate of 250
developed no immunity to this infection, and acute entirely unknown. The Bantu has as yet lesions (Wells, 1931), so that the disease was historic Bantu shows no evidence of tuberculous miliary tuberculosis, infected silicosis, and tuber-

tous broncho-pneumonia are frequent pathol-
gies. On the mines, over 2,500 cases of pul-
monary tuberculosis and 1,400 cases of silicosis occur annually; these people return to their kraals to die within a year, spreading infection far and wide. Tuberculosis is rife throughout Zululand, and the Medical Officers of Health of certain municipalities in Natal report that tuber-
culos in the Bantu has got beyond their control.

The high incidence of leprosy among the Bantu is of interest. There are 2,500 certified Bantu lepers, plus a further 2,000 cases under surveil-
ance, as against a hundred European cases (population ratio 3.5:1). Leprosy affects those whose diet contains an excess of carbohydrates with little protein, fat and vitamins. Where the standard of diet is poorest, the incidence of leprosy is greatest. "Favourable conditions for leprosy are readily produced by malnutrition and other forms of debility. The initial infection takes place as a result of prolonged intimate contact usually during infancy. Due to this and the probability that the organisms will lie dormant indefinitely if the individual's health remains good, leprosy is essentially a disease of the poorest and least developed classes, hence its prevalence and persistence among the under-
nourished inhabitants of our native areas" (Cluver, 1933).

Deficiency Diseases of the Bantu.
The faulty nutrition of the Bantu renders them susceptible to various deficiency diseases. There is no doubt that the Bantu diet is deficient in all the vitamins, and that the children are peculiarly prone to vitamin deficiency diseases. The pre-
valence of pellagra, scurvy and rickets is high, and the former two diseases may be regarded as endemic in certain poor districts. Even in this land of plentiful fruit the Bantu obtain little of this essential vitamin-providing food. Through the investigations of Levy and Fox (1935), it is apparent that the anti-scorbutic content of Bantu food must frequently fall to very low levels, even if scurvy does not occur:—

<table>
<thead>
<tr>
<th>Food</th>
<th>Ascorbic Acid (mgms)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orange</td>
<td>0.7</td>
</tr>
<tr>
<td>Mealie</td>
<td>0.08</td>
</tr>
<tr>
<td>Bean</td>
<td>0.08-0.3</td>
</tr>
<tr>
<td>Milk</td>
<td>0.003-0.01</td>
</tr>
<tr>
<td>Kaffirbeer</td>
<td>0.002-0.005</td>
</tr>
</tbody>
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Ross (1931) states that scurvy—florid or latent—is fairly commonly met with amongst South African natives, and is especially severe among children who subsist solely on maize and its derivatives. MacVicar (1932) in a survey of disease among the Ciskei natives, showed that the incidence of scurvy, debility and inflamed eyes and mucous membranes due to lack of vitamin A
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was correlated with the occurrence of drought. During the prolonged drought of 1928, 850 children were examined, and 435 showed signs of scurvy or xerosis. When the rains came the improvement in general health was considerable.

The fact that the general population are in a sub-nutritional state as regards vitamin C seems well established. In an examination of mine recruits, Bernstein and Weiner (1937) found that the Bantu intake of the vitamin was a fraction of the European requirement of 30 mgms. ascorbic acid daily, and that their body store was on the borderline of a subscorbutic state. In the annual Public Health report for 1933 it is observed that scurvy continues to cause trouble among the mine natives in spite of the provision of anti-scorbutic substances, and 273 severe cases were admitted to hospital. Florid scurvy develops very frequently in recent recruits who are put on hard work underground. The reason is that they arrive in a sub-scrobutic state, which manifests itself when severe exercise is undertaken.

Due to a deficiency of vitamin B in the diet the people are in a sub-pellagric and beri-beri state. Outbreaks of pellagra are of frequent occurrence (Editorial, S.A.Med. J., 4, 342, 1930.)

The Bantu children are not protected against rickets and other bone diseases to the degree that one would expect in view of our sunny climate and the high ultra-violet content of our sunlight producing sufficient vitamin D in the skin to satisfy normal requirements. It is probably due to disturbances in the mineral metabolism, the low calcium and phosphorus content of extensive soil areas in South Africa being reflected in the diet. Till, in a study of dental caries among kraal children in the Transvaal, observed that 74 per cent. had caries, and that bad dental development was noticeable. Oranje, Noriskin and Osborn (1935), however, found that Xosa mine recruits had almost perfect teeth, the mine labourers showed some degree of dental caries, while urban natives showed a high percentage of carious teeth. The deterioration in the teeth is ascribed to the increased use of sugar and machine-milled mealie-meal.

Socio-Economic Considerations.

Poverty in diet is usually associated with defective sanitary surroundings, lack of cleanliness and overcrowding. These in turn are conducive to plague, typhus fever, typhoid fever, meningococcal meningitis, hookworm disease, and respiratory diseases such as tuberculosis and pneumonia. The increased incidence of these diseases in 1933-4 is in large measure due to the delayed action of the economic depression with its evil effect on the food and housing conditions of the poorer classes of the community.

It seems that, however deeply we may delve into the minutiae of the relationship of faulty nutrition to disease, the essence of the whole matter lies in this: the use of a properly constituted diet is a sure means to the attainment of physical efficiency and health. The Government is not oblivious of the position (Commission of Enquiry into the training of Natives in Medicine and Public Health); a determined effort is being made to educate the Bantu so that he may bring treatment and the principles of hygiene to the huts of his own people. By the training of native "medical-aids" it is hoped to educate the Bantu masses in health fundamentals, dietetics, etc., and to overcome their prejudice of European medicine.

The problem in connection with deficiency diseases and malnutrition is no longer one of lack of knowledge in their nature, nor of their means of prevention, but one of improvement of conditions of living and of the food-supply of the Bantu people. Indeed, an important consideration in South Africa at the present time is the adjustment of the population to its food-supply. It is one that is capable of solution only by the people themselves; by the jettisoning of old habits and customs unsuited to modern economic conditions; by a better economic relationship between black and white; and by the casting aside of a lazy, indolent life.

BIBLIOGRAPHY.