

THE FOOD POSITION

[Text of a talk given by Dr. W. R. Aykroyd, M.D., Sc.D., Director of the Nutrition Research Laboratories, Coonoor at a meeting of the Nilgiri Planters' Association, South India.]*

The diet of countries which normally import a large proportion of their food supply is naturally subject to great alteration in times of war. England is such a country and the war has led to far-reaching changes in the national diet. I do not propose to discuss in detail war-time food problems in England and the hitherto successful efforts of the authorities to maintain the population in a good state of nutrition. I shall however refer here and there to measures taken in England which are of interest in connection with the situation in India.

In comparison with many other countries India is a self-contained country as regards her food supply. Both imports and exports are small in relation to indigenous food production. The most important food import is, or rather was Burma rice. Imports of other grains are negligible. There is in normal times a small import of expensive products, such as tinned and cold-storage foods, but the use of these is confined to a small section of the population.

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and they may be disregarded in considering the situation as a whole. Some of us miss certain luxuries, which are in short supply at the moment, but we can manage perfectly well without them. One or two imported foods, *e.g.*, dried milk powder and cod liver oil, are of importance from the standpoint of nutrition, but of no quantitative significance.

Rice imports during the last ten years have ranged from 1.1 to 2.6 million tons annually. In 1939-40 they exceeded 2 million tons. Of the total quantity imported, 92 per cent came from Burma, the remainder from Thailand and Indo-China. The total indigenous rice production can be taken as about 29 million tons. Imports in 1939-40 thus amounted to about 6.5 per cent of total rice supplies. Two million tons mean food for about 12 million rice-eaters, reckoning intake at one pound daily.

During the years 1935-40 some 51 per cent of rice imports from Burma, and 93 per cent of imports from Thailand and Indo-China, were cleared through ports in the Madras Presidency. In 1934-40 some 18 per cent of the total rice supply of the Presidency consisted of imported grain. The average percentage for the last ten years may be reckoned as 10-14. Shortage of rice resulting from the cutting off of imports will thus be more keenly felt in the Madras Presidency than elsewhere in India.

Exports.—The loss of imports has not been made up by restriction of exports. Exports previous to the war were small, so that any loss of overseas markets could have little effect. Actually the quantity of grain required for export has been considerably increased as a result of the war. Wheat has to be sent overseas to feed armies and civil populations. Ceylon, cut off like India, from supplies of Burma rice, has to be provided with food. The population of

Ceylon (6 millions) is only 1.5 per cent of the population of India and she presumably can obtain part of the food supplies from home-grown crops and accumulated stocks. Nevertheless, the requirements of Ceylon will add appreciably to the rice shortage.

Increased Internal Requirements.—

There is another factor to be taken into consideration. Industry is booming, and wage levels have arisen and the number of workers employed in industry has increased. This means that certain sections of the population can afford to consume *more* food than before the war. It has been repeatedly found in diet-surveys that low-paid industrial and urban workers generally have a calorie intake below normal requirements. Any increase in real income will increase their consumption. Men in military service require and obtain more food than they did previous to enlistment. Orr & Lubbock, discussing war-time food resources in Great Britain, make the following comment :—

“It must be remembered in planning our food supply that there will be an increase in gross requirement for food. Men in the fighting forces need about 4,000 calories per day, an increase of between 25 and 30 per cent over the requirements of men in peace-time occupations. Before the war has finished we may have between three and four million men under arms. There will also be a larger number of men employed in the heavy industries. The food requirement of every man who was formerly unemployed will be increased by 30 per cent or more. Hence the total national energy requirement will be increased by between 5 and 10 per cent.

“In India the percentage increase in the ‘total national energy requirement’ will naturally be of a much smaller order, but by no means negligible.”

1.—Feeding the People in War-time, (Macmillan, 1940).

Lack of Margin of Safety.—Even in normal times the food supply of India plus imports does not cover requirements in the sense that the population is abundantly or satisfactorily fed. The diet of large sections is deficient in quality and quantity and below generally accepted standards of adequacy. Because of the existing bare minimum level of diet, there is little 'margin of safety' to allow for further restriction. Some years ago (1937) the author attempted to calculate the total food production of the Madras Presidency and compare it with food requirements. While the investigation was difficult and on the whole unsatisfactory, owing to the absence of adequate statistical data, it provided an indication of the state of affairs. It was calculated that the total food available, including imports, was just sufficient to cover total calorie requirements, reckoned on the basis of 2,500 calories per consumption unit daily, provided it was evenly distributed. The conclusion was as follows: "It seems clear that there is no excess of supply over requirements, and that the imports of rice and other food are necessary to supplement internal production." The above conclusions as regards "lack of margin" can be applied to the whole of India.

More Food Needed.—India is thus short of food, and the only way to ease the situation is to produce more food as rapidly as possible. "Enough food" takes precedence over "the right kind of food;" calories over proteins and vitamins. When increase in the total supply of calories, the solid bulk of food, is the primary and most important consideration, attention must be given to any crop which gives a large and rapid return irrespective of its nutritive value and the habitual preferences of the population. When there is a real food shortage, people will not spurn unfamiliar

food. A few examples may be given in illustration. Tapioca is of low nutritive value because of its low protein content and in normal times the replacement of rice or other cereals by tapioca is most undesirable. Tapioca, however, gives a large and rapid return — an acre under tapioca will yield two to four times as many calories as an acre under rice or wheat — and it is a dry crop. In the circumstances the extension of tapioca production in suitable areas would be justified. Maize, when consumed as the main ingredient in the diet, may lead to the disease pellagra because of some defect in its chemical composition. It is, however, a highly productive cereal and if its cultivation can be rapidly increased its qualitative defects should be overlooked. The millets—bajra, jowar, Italian millet, etc. — are usually considered inferior as foods to wheat and rice. Actually their nutritive value, in comparison with that of other cereal grains, is in general satisfactory. If they can be produced in greater quantities, they can replace equivalent quantities of wheat and rice without disadvantage from the standpoint of nutrition. In certain parts of the Northern Circars the consumption of millets in place of highly-milled rice has had a good effect on health. Owing to the high price of the latter the poorest classes are eating one meal of millet daily. As a result the incidence of acute beriberi in adults and infants has fallen.

Potatoes.—Orr & Lubbock (*loc. cit.*) make the following comment about the potato, with reference to war-time food problems in Great Britain:—

"The potato is of special value for health. An acre of potatoes gives twice as much food as an acre of wheat. It is the surest first crop off ploughed-up old pasture. *The potato is the best insurance crop*

against food shortage. Potatoes should be subsidised for increased consumption."

The potato is one of the staple foods of the British army. Unfortunately the areas in which it can be cultivated in South India are limited and there are likely to be very serious difficulties about fertilisers. But the sweet potato thrives in tropical climate. This root is of considerable value as a supplement to ill-balanced rice diets and its cultivation could be extended with advantage. The production of yams could also be increased.

Vegetables.—During the war a great and successful effort has been made in Great Britain to increase the production of vegetables. Gardens, allotments, golf links plots of waste ground generally have been made to yield their quota. A carefully planned scheme to ensure a steady supply of vegetables from small plots throughout the year was drawn up by the Ministry of Agriculture. Gardens of about 15 × 20 yards in area are producing the following quantities of vegetables in the different seasons :—

	Gross Weight
Spring	17 lbs.
Summer	19 "
Autumn	19 "
Winter	26 "

The possibility of increasing the production of vegetables in India by such means is obviously much smaller, but something could be done in this direction. Boarding schools and other institutions receiving government grants can be compelled to create vegetable gardens, or extend gardens already in existence. Institutions already producing vegetables for their own use, such as jails, can increase output by 100 per

cent. Owners of suitable compounds can be encouraged or compelled to grow vegetables. The production of vegetables by people of standing has a good psychological effect. I understand that H. E. the Viceroy has given the order that some of the grounds of the Viceregal House in Delhi should be devoted to growing vegetables and that H. E. the Governor of Madras has done the same with regard to grounds of Government House in Ooty. No doubt there would be difficulties in supplying enough seed for a wide-spread and rapid extension of vegetable growing and any increase in production immediately feasible would amount to only a tiny fraction of the additional food required. Garden vegetables are in general foods of low calorie content, and do not add very materially to the energy value of diets. They are, however, a good source of certain vitamins and of value as "health-giving" foods.

More Food from Cereal Grains.—In England the use of wheat flour of 85 per cent extraction has recently been made compulsory, i.e., the population is to be fed on brown instead of white bread. The effect of this is to increase the nutritive value of the staple food of the country, but at the same time to reduce the amount of food for livestock available and hence supplies of milk, meat and eggs. Shipping space will be saved by importing less wheat, the reduced quantity available being made to supply an amount of human food equivalent to that supplied by the previous larger imports. A given quantity of grain or grain product fed directly to human beings supplies much more energy (calories) than the same amount of grain fed through animals and returned as meat, dairy products, or eggs. The effect of the change, as has been pointed out, will be to reduce supplies of these foods, but presumably it is hoped that the improvement

in the nutritive value of the staple cereal will make up for losses in other directions.

In India the position as regards wheat is quite different. The great bulk of the wheat crop is stone-ground in village homes and small mills, and consumed whole or nearly so. The production of refined wheat flour (maida) in roller mills amounts to only 400,000 tons, or approximately 4.5 per cent of the total wheat supply. Clearly prohibiting the manufacture of white flour would have a negligible effect on the quantities of wheat products available for human consumption.

Rice.—Some 27 per cent of the total paddy crop is machine-milled, the remainder being prepared for consumption by hand-pounding. The total quantity of machine-milled rice produced amounts to about seven million tons. Hand-pounding removes the germ and a proportion of the pericarp; home-pounded rice is not equivalent to husked whole rice with all the integuments of the grain intact. Taking home-pounded rice as the standard, what would be the effect if all the rice produced in India were consumed in the same state? A given weight of paddy would yield about 6 per cent more rice for consumption. If all paddy were home-pounded, or milled only to the same degree as home-pounded rice, an additional 420,000 tons of rice or thereabouts, amounting to about 1.6 per cent of total rice supplies, would become available.

It would be reasonable to encourage the use of home-pounded rice as a method of extending available food supplies. People used to consuming highly-milled rice are, however, usually very loath to change over to under-milled rice, and even if by some miracle of propaganda the change could be rapidly brought about, it would not greatly influence the situation as regards

total supplies of rice. The same is true of any compulsory measure prohibiting the milling of rice beyond a certain degree.

Similar problems do not arise in the case of the *millets*, which are not subjected to milling processes which remove the most valuable parts of the grain.

Food Production and Requirements.—

I do not propose to discuss transport difficulties, the hoarding of stocks, commercial brigandage and how each is responsible for producing the present situation. At the moment the commercial aspect is most prominent. The people are firmly convinced that the high price of foodstuffs and short retail supplies are the result of the villainy of middlemen. Much could be done to control the prices of available food supplies, to arrange for necessary transport and ensure their equitable distribution. These are matters for vigorous government action. It is the commercial and railway transport aspects of the food situation which are most prominent in the mind of the government official. But we must avoid the idea that the solution of the problem is entirely a matter of price regulation and so on, that all would be well if a few profiteers were dealt with according to their deserts and the remainder intimidated by the wholesome example. Behind the commercial ramp there is, or will be, in all probability, a real shortage of food. At present it is very difficult to estimate how serious the shortage is. We have figures for rice production in normal pre-war years and for purposes of calculation it might be assumed that production in future will be of the same order. Theoretically it might be possible to compare such an estimate of production with the calculated requirements of South India. But the existing figures are scarcely accurate enough to justify such a method of

approach. Another difficulty is that we have no precise knowledge as to the proportion of the population which consumes rice. This is not a constant proportion, since many groups which in general prefer to eat rice when its price is low will turn to millets when the price of rice is high. Again, there is no real information as to the existing stocks of rice and other grains — a point of essential importance. We have

however the undeniable facts that for a number of years India has been importing Burma rice in fairly large quantities and that this food came into the country because it was needed. Imports are now stopped. It is, therefore, safer to assume that there is, or will be, a genuine shortage of food, perhaps not of very formidable proportions, but still a shortage, and take steps accordingly.