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The Problem of Malnutrition in India.

THE fact that millions—perhaps the majority—of the people of India suffer from various degrees of malnutrition seems beyond dispute. It is true that more precise data on this question are required—data which can be collected only by dietary surveys, and the systematic physical examination of sections of the population to reveal the incidence of states of malnutrition and deficiency diseases. But sufficient information already exists to prove that malnutrition is widespread. If the diets of the majority of the population, particularly of the poorer classes, are compared, even in a rough qualitative way, with the dietary standards put forward by modern physiologists, it at once becomes apparent that the former fall short of adequacy; in general, they are deficient in the more valuable proteins, and in certain vitamins and mineral salts. Again, food deficiency diseases—beri-beri, certain forms of anæmia, epidemic dropsy, xerophthalmia, etc.—are common throughout most of India. The poor physique and lack of resistance to infection shown by the majority of the population in many parts of the country also suggest that the average Indian diet is a defective one.

It should be realised that this state of affairs is not peculiar to India; that, in fact, the same problem exists in most countries of the world. Outside Western and Central Europe, North America, Australia and New Zealand, and perhaps a few other fortunate countries, the diet of the mass of the population is not very different in quality from that of the poorer classes in India. Thirty or forty years ago, malnutrition and certain food deficiency diseases—*e.g.*, rickets—were very common in England; it is only gradually that the dietary level of the masses is being raised even in the most prosperous countries. To-day China presents a problem of malnutrition which is as formidable as that of India, and there is evidence that other Eastern countries, such as Java, Malaya, and Japan, are in a scarcely more favourable position. The question of malnutrition in South America has been little studied as yet, but quite recently the authorities of one South American country very

remote from India—Chile—have reached the conclusion that dietary deficiency is one of the main causes of ill-health and disease in that country, and are taking steps to investigate and remedy the situation. It may well be that, for a number of reasons connected with religion and climate, the problem of dietary deficiency in India is more difficult of attack than elsewhere, but the difference is one of degree, not of kind. While economists talk of over-production of foodstuffs, the greater part of the world's population would be the better for more food of superior quality to eat.

As regards India itself, the subject of nutrition may conveniently be considered under two heads: research, and the practical application of modern knowledge. More precise data about the dietary habits of the people in different parts of the country are required; these can be obtained only by laborious surveys. In conjunction with such surveys, systematic physical examinations of selected groups should be carried out; apart from general impressions, we have little exact information about the prevalence of states of malnutrition and deficiency disease among urban and rural populations. It would be useful (and simple) to collect in schools data about average height and weight, for each age group, in different races, classes, etc., throughout the various provinces; English and American growth standards are not applicable to India. There are wide gaps in our knowledge of the nutritive values of Indian foodstuffs, particularly as regards vitamins, and mineral salts; steps are already being taken to fill these gaps. Quite apart from such obvious and necessary investigations, there remains a great deal of original clinical and laboratory research to be done on food deficiency disease. In all probability, there are food deficiency diseases in India which have never been observed or described, and even those diseases which are familiar text-book entities might repay further clinical, pathological and epidemiological study.

Certain statistical investigations concerning food supply in relation to population would help to clarify the situation. First a dietary standard reasonably capable of fulfilling the needs of human beings should be chosen, and this diet translated into terms of foodstuffs which can be produced or made easily available in India. Secondly, the food requirements of the population in terms of this adequate diet can be calculated, and a

comparison drawn between the national requirements so defined and existing agricultural production and food imports. The fact would probably emerge that existing food production and import fall far short of the point at which such a diet could be supplied. Lastly, the improvements and changes on agriculture and imports necessary to attain this end can be stated in exact figures and subjected to careful analyses. A series of calculations of this nature would provide a solid basis for agricultural (and even fiscal) policy. The resulting figures might not, indeed, be too hopeful; they might clearly show that, in the absence of potentialities for great increase in food production, or of increase in national wealth allowing for food importation on a large scale, there must be a growing disproportion between available food supply and the dietary requirements of an expanding population.

A broad survey of the type outlined may be impossible at the moment owing to the lack of sufficiently accurate data about food values, crop production, livestock, etc. But there is no reason why such information could not be obtained. Bowley and Robertson, in their recent report,¹ have described the defects of existing statistical services and made various suggestions for their reorganisation. Improvement in statistical information would help nutrition research workers to grasp the problem of malnutrition in India as a whole.

Let us turn to the question of practical application, to what may be termed public health nutrition work. Sir Robert McCarrison has repeatedly emphasised the fact that knowledge in this field has already far out-run any efforts towards making use of that knowledge for the benefit of the people of India. Difficulties are enormous. While poverty is the main obstacle, ignorance and prejudice, by no means confined (in India as elsewhere) to the classes which are too poor to have much choice in the matter of food, must play a great part in producing malnutrition. Again, public health nutrition work in India can only develop *pari passu* with public health work of other kinds. But steps could be taken to ensure that nutrition work is given a prominent position in existing public health programmes, and that as time goes on it should receive increasing attention.

¹ A Scheme for an Economic Census of India. New Delhi, 1934.

For this purpose it is essential that emphasis should be laid on nutrition in the training of public health workers of all kinds, including medical officers of health, nurses, health visitors, etc. In some Western countries much practical nutrition work is carried out through the medium of maternity and child welfare centres, health visitors, and the school medical services. As such activities develop in India, opportunities will arise for improving diet by educational and other means.

The question of attaching nutrition specialists to public health departments might receive consideration. Each provincial department might perhaps employ an official with an extensive knowledge of the subject whose duties would be to prepare educational material, to assist in maternity and child welfare work and work in schools, to lecture to medical students, nurses, and subordinate public health officials, to regulate diet in public and residential institutions, etc. All large public health departments in U. S. A. have workers of this kind attached to them. It might be difficult to find men or women qualified to undertake duties of this nature at present in India, but in future provision could be made for their training by various means.

Elementary instruction about diet and food values might be given to the higher grades in the schools, both public and private. The interest taken in McCarrison's book *Food*, and the considerable use that has been made of it in schools, suggest a willingness on the part of school teachers to add this subject to the curriculum. But teachers themselves must first be taught its importance, and a useful line of attack would be through teachers' training colleges. With regard to the education of the public, something might be accomplished by means of suitable press articles, wireless talks, etc. There seems to be an awakening interest in nutrition throughout the country, and the literate classes might respond to intelligently prepared propaganda.

The problem of malnutrition in the village might be approached by selecting small "demonstration" rural areas for intensive

work. Data about dietary habits could be collected by careful surveys involving a number of families, and subsequently correlated with the "state of nutrition" of the population group concerned. The exact nature of the deficiencies in the diet would thus be made apparent. The next step would be to attempt to improve nutrition in the "demonstration" area by various means—education and propaganda, maternity and child welfare work, improvement in livestock and agricultural production, etc. The chief aim of a public health nutrition experiment of the type outlined would be to investigate the possibilities of improvement lying within the resources of the people themselves. Results obtained in small areas might have a general application throughout the country.

If the public health side of nutrition work is to develop in the right direction, it is essential that adequately equipped research institutions should exist to provide basic knowledge. Nutrition research is being actively carried on at Coonoor and elsewhere, but there is room for extension of existing institutions working in this field and for the creation of new ones. Sir Robert McCarrison, writing in *Current Science* in July 1932, suggested that "each Presidency or Province should have its own Institute for the study of Nutrition". The activities of the ideal nutrition research institute should include basic scientific research, systematic surveys of foodstuffs, study of cheap well-balanced diets within the means of the poorer classes, field and epidemiological investigations, and a good deal of propaganda and education work. It should have a department for training public health workers of various kinds.

Researches in animal husbandry, nutrition, agriculture, and human nutrition, and efforts to apply in practice the results of scientific research in these fields, are complementary and directed towards the same end. The greatest possible co-operation between those concerned in these activities is desirable.

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