
CURRENT SCIENCE—50 YEARS AGO

Nutrition Research in India.*

THE contributions of Major-General Sir R. McCarrison to our knowledge of nutrition in India form an impressive record of great scientific and practical value, and his retirement from service about the second week of last month has deprived this country of a devoted scientist whose selfless labours have won for him not only public recognition but the personal esteem of all who have come into contact with him. His researches on the thyroid gland in health and disease opened a new and fruitful field of enquiry into the science of nutrition and it is perhaps with this branch of knowledge that Sir Robert McCarrison's name will chiefly be remembered by posterity. He is probably the first medical officer who formulated a synthetic conception of the effects of faulty food on animal organs and tissues in relation to the endocrine regulations of metabolism. As early as 1919, he observed that faulty nutrition led to the degeneration of the cellular activities of the gastro-intestinal tract and a general lowering of the digestive capacity, which, besides diminishing the economic efficiency of man, exposed him to the insidious attacks of disease. This is undoubtedly a significant contribution to our knowledge of the rôle of nutrition in preventive medicine. In fact the latest investigations which have built up our knowledge of nutrition are detailed amplifications of the facts emphasised by Sir Robert McCarrison in his *Studies in Deficiency Diseases* published in 1921; and his other works such as *The Life Line of Thyroid Gland* and *The Thyroid Gland in Health and Disease* form an illuminating chapter in the history of medical research in India.

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In his farewell address which he gave at Coonoor on 18th March, Sir R. McCarrison pointed out that in his laboratories he kept 1,000 stock rats from which, during the last four years, disease was practically excluded by careful attention to three environmental conditions, cleanliness, comfort and food. Race horses and prize dogs are tended with greater love and care than perhaps even Sir McCarrison's rats. But is there

any district where 100 school-going pupils enjoy a fraction of the cleanliness, comfort and perfect food which are bestowed on animals? The tendency of modern competitive civilization is that man will sacrifice everything for the gratification of his vanity, and will almost completely ignore what will promote the health and efficiency of human stock. It seems to us that the warning given by Sir R. McCarrison, "The child is made up of what he eats" is a prophetic utterance, for the nation that neglects its children paves the way for self-extinction.

The main problem of the masses of Indian population is what foods they have to buy in order to obtain the greatest possible nutritive value out of a given amount of money each week. We have a vast body of carefully tested information regarding the nutritive value of the various types of food as well as their physiological value, and the experimental researches of scientists have established standards of nutrition. But the great majority of the people either on account of ignorance or of economic reasons are unable to work these standards into their daily meals. Thus the welfare of the nation which depends basically on how its people eat becomes a matter of chance, instead of being part of a definite economic and social policy of Government. The food requirements of a nation must necessarily lead to the carefully planned adjustment of agriculture, but unfortunately agricultural policy in India is not correlated with the science of nutrition. Obviously all these elements constitute a single great administrative problem and what the people want is a plan which is complete, simple and flexible enough to suit different levels of income. A plan such as we contemplate involves the necessary adjustment of production to consumption by families in the home which is the part that means most for the social welfare and the economic efficiency of the working classes. The cultivator therefore has to produce the right kinds and the appropriate quantities of food. On the other hand the consumers must have a definite knowledge of the facts about the diet in relation to health, the standards of food nutrition and the fundamental principles guiding the selection of a diet that promotes health and safeguards against diseases. Every individual is entitled to have an optimum diet though not to a Dukedom. We are thus confronted with the problem

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of the need and possibility of building up a physically better, healthier and more vigorous population in India by means of better nutrition. The first step in the solution of this question is the consideration of costs, and we have therefore to prepare dietetic patterns at different levels of nutritive content and cost. What we really want is clear and usable statements of the foods to buy and the quantities needed for every class of people suited to their incomes. The scientists have to deal not with the food which an ample purse can buy, but with that for which people have to rake and scrape and count every pie they spend and then do not have enough to go around.

The common practice in India is to cook food containing strong organic acids and alkaloids in vessels made of brass, copper, bell-metal, iron, tin and aluminium at very high temperatures, and cooked food is also stored in these metallic vessels for very long periods of time. The Biochemistry Department of the Indian Institute of Science has been conducting a series of interesting experiments on the effects of food cooked in the various kinds of metallic vessels on the general health and biological efficiency of rats, and the results that have so far been obtained tend to establish that foods cooked in earthen pots promote and preserve the health of rats, while those fed on food prepared in metallic vessels develop a predisposition to ill-health and premature senility. These researches are of the greatest significance to the general public and one of the reasons for the poor physique of the richer and the middle classes of Indian population may be the slow and insidious contamination of food by metals. The prejudice in favour of metallic vessels is too deep-rooted to be removed by scientific researches, and further, this problem is so intimately connected with important metal industries, that sudden discontinuance of all metallic utensils on a wide scale is bound to produce economic dislocation, unless some other lucrative and cheap industry can be substituted in their place.

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The question of feeding India for national efficiency is sufficiently important to warrant the creation of certain new departments such as the Bureau of Food

Economics and the Agricultural Adjustment Board which would have to work in closer collaboration with the Nutrition Research Laboratories at Coonoor and with the Provincial Agricultural Departments. The first step is to work out a set of figures showing the amount of land that would have to be devoted to various food crops for each of the different dietary plants, assuming that they will be universally used by the Indian population. These figures will naturally include not only crops used directly for human food but also crops necessary to feed the required dairy and work animals. A close relationship has thus to be established between dietary habits and agricultural practice.

Education must go hand in hand with the spread of sound knowledge of diet so as to ensure that every poor family in India acquires enough information to make a correct selection of food and improve food habits. For this purpose the vernacular newspapers and magazines should constantly emphasise the importance of perfect diet and its relation to national efficiency; perhaps the radio will be of immense service in improving Indian dietary as a whole. In their eagerness to be well and to be at their best, people will readily accept misleading information and one of the chief concerns of the new departments suggested, will be the raising of the dietary standards as one of effective propaganda. It is made the easier by the fact that good diet or even optimum diet is not out of line with the average Indian food habits, even though the emphasis may be different. In India, the food of the poor man has to be investigated as carefully as milk has been investigated, and this new work has to define accurately the needs of the poor for various food elements, determine their functions and uses in the body, and perhaps discover, if possible, new elements. This is the only way in which we can plan diets intelligently, weighing both economic and nutritive values. The difference between the diet of the poor man and of the rich man may after all be one of cost, but scientifically there is a unity of interest, *viz.*, the need for well-being. This seems to be cardinal truth of the body of man as well as of the society of men. The wise management of a family may be an individual's concern, but the maintenance of the national well-being is absolutely the task of government.