

Providing For The Essentials Of Life

Feeding the Nation

By L. B. PETT

SCIENCE must have some bearing on social institutions because it enlarges the knowledge of man and his control of his environment and his own life. The biochemical investigation of problems of nutrition has already shown a remarkable correlation of health and development with the level of diet. This correlation, and its social implications, have been recognized for many years, and have changed with the acquisition of more and more information. In the last ten years standards of food requirements and other investigations in nutrition have advanced sufficiently to bring a glimpse of a wonderful new social order in which abundance of the right foods, adequately used by everyone, would bring a degree of health and vigour never before considered possible. This article will, therefore, consider food and nutrition, not simply as a means of survival, nor yet alone as a method of avoiding certain diseases, but rather with the positive objective of hitherto uncommon health and longevity. This objective puts food in its proper place as an essential of life for which all must strive in post-war reconstruction.

Toward the end of the last century the new science of nutrition had progressed to a stage of setting up certain standards of food requirements in terms of daily amounts of proteins, fat and calories. A few mineral salts were grudgingly included. It should be emphasized that the requirements of to-day, as well as of that day, are estimates based in some instances on very inadequate experimental evidence. But these estimates, changeable as they may be, are nonetheless valid for consideration in relation to their social impacts. On the basis

of the estimates current about 1890, Booth and Rowntree¹ calculated the cost of a minimum adequate diet and concluded that a large proportion of the population could not afford this minimum believed to be necessary for a healthy life. It is almost needless to say that this conclusion was neglected at that time.

A few years later found the minimum requirements, which had been previously accepted, being criticized, some as being too high, others as too low. This type of criticism is levelled against standards even to-day, and will continue to be so levelled until the experimental evidence is complete. It must be realized, however, that progress has been made, and current standards rest on a more accurate foundation than those of 40 years ago. In 1905 Chittenden² was advocating a lower protein intake and others also criticized Booth and Rowntree for using a minimum food standard that was "wastefully high." At this stage the accurate knowledge of nutrition was very small, and the scientific method had not yet begun to establish the new conception of food and its relation to health. It was therefore impossible for the economic and social implications of Rowntree's calculations to be appreciated.

In the last thirty years, with the advent of the vitamins³ into nutrition and social consciousness, advances in nutrition have been so rapid and fundamental that it is now possible to examine once more this thesis. The thesis is that a large proportion of the population cannot obtain suf-

EDITOR'S NOTE: L. B. Pett, Ph.D., M.D., F.G.I.C., is Director of Nutrition Services in the Department of Pensions and National Health, Ottawa.

1. Booth and Rowntree, quoted by Bayliss, L. *General Physiology*, 1918

2. Chittenden, R. *Physiological Economy in Nutrition*, 1905.

3. Vitamins are organic food substances found in varying amounts in foods and essentials for life but needed in very small quantities such that you cannot see them, taste them nor smell them. A famous colloquial definition with a grain of truth in it is "Vitamins are little things that make you sick if you do not eat them."

ficient of the foods necessary for the health and vigour that they could have. The reasons for this inability have become more complex than at the beginning of the century. The purely monetary factor is still with us, in the sense that many people cannot afford the minimum food essentials, according to current standards. In addition the increased complexity of life has changed our food supplies in many ways, and has removed many people away from the chance to produce food for themselves. This situation has developed our big food industries and has aimed at greater convenience in distribution and sanitation, but not at nutritive value. Nor have we developed the socially-desirable goal of really assisting people to an adequate diet. Even with enough money for all it would be difficult if not impossible, at the present time for everyone to be adequately nourished because our production, processing and distribution of foodstuffs is not integrated to a nutritional ideal. Such an integration must form a fundamental part of any planning we do for the future.

The current situation and conceptions are further complicated (in addition to the change in distribution and processing mentioned above) by radically altered views of requirements, and by the discovery of many new dietary factors whose requirements must be defined.

The rapid advance in this field must be used as the reason why there is still some doubt on the exact dietary standards to be used. For example, in 1920 the leading pediatrician in Vienna still held rickets to be an infectious disease, while to-day we know it is a deficiency disease.³ Furthermore these standards have been undergoing a subtle change, owing to our altered views of requirements. In 1926, Corry Mann⁴ provided a dramatic human experiment which is still one of the best ever performed to demonstrate this new

idea that there are *gradations of health obtainable from food*. A group of boys was given a diet considered adequate by the standards current then, and they did not show any definite evidence of malnutrition; but a second group, treated exactly similarly in every respect except that they received an extra pint of milk a day, grew appreciably faster, were much livelier, and even learned more readily.

This means that we are now thinking about health levels far ahead of those measured by the presence or absence of definite deficiency diseases, and these health levels are dependent upon the quality of the diet.

Numerous researches in the last 15 years have emphasized this new conception of the health we could have from foods in addition to mere freedom from certain diseases, and the new requirements that must therefore be met. There is, for example, a wide margin between the doses of vitamin A which just keep a rat alive, and the doses which keep the rat from obvious evidence of disease, and finally the maximum doses which the rat seems able to use with advantage. The latter dose seems to be about four times the former. Similar results have been obtained when other vitamins are investigated. The amount of vitamin (or ascorbic acid) which will protect a human from any evidence of scurvy may be as low as fifteen milligrams but some evidence suggests that fifty milligrams may be used to advantage, and some investigators even state that the vitamin C requirements are 100 milligrams; in fact our present standard of 75 milligrams is simply a compromise between these viewpoints, until experimentation decides the issue. These differences arise from the new conception of the essentiality of food not just to avoid evidence of certain deficiency diseases, but really to provide all the requirements for a new type of life. A failure to appreciate this gradation of health sometimes leads to a distrust of new dietary standards, but the arguments of scientists over new standards are not reasons fo

3. By deficiency disease may be understood a condition of ill health resulting from the relative absence or insufficiency of one or more factors, normally found in food; it is therefore distinct from diseases caused by the actual presence of some harmful agent like bacteria.

4. Corry Mann, H. C. *Report Medical Research Council*, London, No. 105, 1926, H. M. Stationery Office.

denying the vision which has been given, nor to neglect proper planning for adequate nutrition in any reconstruction program. Research in nutrition may ultimately solve these problems, and in the meantime we must utilize current knowledge to our advantage.

Before leaving this discussion of the fact that current standards of dietary requirements, being based on new conception of gradations of health, should form our food guide for reconstruction, it will be profitable to refer to some of the results that are confidently expected to result from an application of our knowledge of nutrition.

Dramatic experiments by Ebbs in Toronto in recent years on the influence of pre-natal diets on the health of both mother and child have emphasized again a phase of nutrition that has long received attention. There is no doubt that a little effort to supply the proper foods to every expectant mother would greatly reduce the troubles and hazards of childbirth, would hasten the recovery of the mother, and would assure life and health and strength to thousands of babies who would otherwise have died or been weaklings.

Then again when the child comes to school, current evidence suggests that it will learn more readily, play more happily, and generally fit into the scheme of things more easily if it has been properly fed. We know too that the teeth will be better if the pre-natal and childhood diets have been proper.

When a person comes to the age for working, and the eyes and ears and fingers must all be used, in office or in industry, once again proper nutrition is important. Surely a new social organization must emphasize the essentiality of providing proper foods so that accidents can be avoided, so that eyes will not get sore (from diet deficiencies, at least), and so that fatigue and mental dullness will not set in before they should. All these factors are influenced by the food we eat.

Sherman has emphasized for many years his experiments on rats which show that extra amounts of various

food constituents above current standards have actually prolonged life; and this prolongation is not, as it were, at the end of life, but rather it is an increase in the prime of life. Such evidence is hard to get on human beings, because we are not organized to find, nor have we the patience to wait for it, but the future may well emphasize this phase of the importance of eating the right foods.

Throughout all this evidence there is the fact that at the same time we can wipe out any trace of dietary deficiency diseases, and even reduce the number of many other diseases. Susceptibility to many types of infection is markedly increased by slight dietary deficiencies. Many of the great killers such as tuberculosis and even cancer may at times be closely dependent for their progress on an intake of poor quality food.

It is self-evident that food is an essential of life, and has an important place in planning for the future. The preceding pages have followed the enlargement of this idea from the primitive one of staving off starvation, through various changing standards to our present glimpse of immense possibilities for future health and vigour and efficiency, touching much more than disease. It is now necessary to examine briefly some of the reasons why food is not being used right now in a manner to give all people the best health it can and therefore some of the measures that will be needed. It must be admitted that malnutrition is probably widespread in Canada right now.

¶ Sir Frederick Gowland Hopkins has said that "few if any nations have at any time been ideally nourished." That great pioneer for better use of food for a higher level of health, Sir John Boyd Orr⁵ has led the way in showing how far short a nation can be from a desirable goal. He has conclusively shown that the health of a large proportion of the people of Great Britain would be improved by a better diet, and that the adequacy of a family's diet depends in no small measure on the family income. Sir John Orr⁴

⁵ Orr, J. B. *Food, Health and Income*, 1926

has said "in the United Kingdom the diet of at least 50% of the population falls short of the desirable standard."

Similar results have been found in the United States, in Canada, in South American countries and elsewhere. In all cases the causes of this condition have firstly, and probably correctly, been related to income. Large proportions of the population are not able to buy the requirements set up as desirable. This does not necessarily mean that large proportions are starving, nor that they show widespread disease, nor does it even imply that in our present state of knowledge we can be very precise about just how undernourished these people are. But they are undernourished, and they lack the means to purchase adequate nutrition.

Unfortunately, however, an increased income does not guarantee adequate nutrition, and even if we had some kind of Utopia which raised the income of everyone in the country it would still not guarantee to the public those benefits which we have suggested might be expected from adequate nutrition. *Neither would it serve any useful purpose to calculate the amount of money per person that would purchase adequate foods unless we also take steps to see that those foods have been produced in quantities adequate to supply everyone, and that they are processed, distributed, sold and finally handled by the consumer in a manner which makes it difficult for him not to get an adequate amount of all nutrients.*

This aspect of the food picture of the future has not usually been accorded sufficient attention, nor is it enough to dismiss it airily with the idea that "a little education will handle that." Proper plans must be laid for the education, and also more emphasis must be placed on the processing and distribution of foods. Even granted sufficient money, people must be guided in several ways to an adequate diet.

In the first place the primary production of each type of foodstuff must be enough both for current needs, and for a carry-over that will smooth out the variations of good crop years and bad crop

years. This primary production should also be guided to give foods of the highest nutritive value in each class. This means an agricultural policy with some nutritional basis. Since the carry-over must be stored, and may have to be processed in order to store it, then the method of processing and storage must be such as to retain as much as possible of the nutrients originally in the food, and possibly as nearly in the original form as may be done.

If processing for the carry-over is thus guided along nutritional lines, then all processing of foods might logically be expected to be similarly influenced. It must be emphasized that the processing of foods during the past 50 years has served a useful purpose for sanitation, ease of distribution and convenience in handling and preparation. It is not *necessary* to attempt a return to unrefined cereals, and unpackaged foods, although this might be desirable in specific cases. Neither is it necessary to condemn any type of foodstuff if used in reasonable amounts.

But it must be definitely stated that the nutritional aspects of all this picture have not received enough attention, and must receive attention in planning for the future. In fairness it must be said that nutrition had not sufficiently advanced to make use of it in many food industries, but it can fairly be said that right now our present knowledge of nutrition is still not being adequately applied in this field. Food industries are just beginning to realize that they should make a product as nutritious as it can be.

Having produced the right foods, and in sufficient quantities, the retail stores or other contacts with consumers must assist a consumer to acquire suitable amounts of the right foods. This is a matter of education both for the consumer and the clerk, and probably this education belongs in regular graded classes in all schools. Schools can give more than just the fundamentals or rudiments of nutrition that they now attempt. They can make it practical.

It may well be recognized some day that proper feeding of school children

is the best method of assuring in a simple manner a proper foundation of health for the whole nation. It may also be realized that society could save money which is now wasted in trying to teach children who cannot learn from lack of adequate foods.

The right of every expectant mother to proper foods should some day be not only recognized, but actually arranged through pre-natal clinics for everyone.

The influence of nutrition in industry may prove to be so important that no employer would dare neglect, (even if he were able to do so) the value of assistance to his workers in getting an adequate diet.

One thing is clear in this outline of what could and should be done in a reconstruction program aiming to put food in its proper place as an essential of life. That thing is a degree of control which does not exist to-day. The primary producers of agricultural products must be

controlled sufficiently to assure enough of every kind of food that is needed. I have recently calculated these quantities for Canada, and a change in our agriculture is certainly indicated. This control probably means a guaranteed price for these commodities, so as to remove the hazards and stabilize the occupation. Some control of the processing and storage of these foods is necessary so that the public may not be misled into a false sense of security in the foods that are bought. The needs of special population groups like expectant mothers, school children or industrial workers must be met in a manner geared to the aims and needs of the nation.

With such controls, of price, information or whatever is needed in the broad integrated plan for the new order, food will continue to take its place as an essential of life, but could do it in a new manner so as to bring untold blessings to the whole nation.

Homes for the Future

By C. MAJOR WRIGHT

AS in most other countries the present war has also in Canada opened the eyes of the general public to the detrimental effect which unsanitary and blighted housing conditions have on people's working capacity and morale.

Another natural consequence of the war is that since priority has to be given to construction directly furthering the war effort such as ammunition plants and airdromes, the construction of dwelling houses fails to keep pace with the increasing demand. That is to say, when the war is over the housing shortage in Canada, as in all other belligerent countries, will be far greater than it was in September, 1939.

EDITOR'S NOTE: C. Major Wright, internationally known housing expert is on the staff of the International Labour Office in Montreal. Previously he taught at the University of Toronto. During the summer of 1942 he studied the British Housing Program as a member of a Committee of experts appointed by President Roosevelt.

In a study presented in 1939 to the Royal Commission on Dominion-Provincial Relations, Dr. A. E. Grauer, Director of the Department of Social Sciences at the University of Toronto, describes the conditions preceding the present war as follows:—"The phenomenal growth of urban population in Canada in the past thirty years would of itself have imposed a severe strain on housing accommodation . . . But on top of this growth came four years of war when the resources of the nation were turned into new channels, a further period of expansion marked by considerable immigration, especially into urban centres, and eight years of severe depression resulting in almost complete cessation of building activity. The inevitable result is a housing problem of unusual magnitude and acuteness."

That the Canadian housing conditions