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The American Food Problem

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Without food mankind cannot exist, and never is this fact so strongly impressed upon the world as in times of famine. The investigations undertaken by Liebig and his followers have led to a knowledge of the elements essential for the nourishment of crops, and their production upon a grander and more economical scale has thus been rendered possible. The dense population and consequent demand and cost of food for man and animals, were factors which led such German investigators as Henneberg, Kühn, Stomann and Wolff, to study the chemical composition of fodders and to the carrying out of feeding experiments with animals, for the purpose of ascertaining how the greatest amount of animal and dairy products could be most economically produced. In consideration of the fact that these lines of investigation have been pursued extensively, it is surprising that so little attention has been paid to the question of food for man. In fact, our present ideas as to his food requirements have been derived by analogy, chiefly from the study of the composition of foods best suited to other animals.

The item of food is perhaps the most important one affecting the wage-earners of the world. According to Carroll D. Wright, 51 per cent. of the total earnings of this class in Great Britain is spent for food; while in Massachusetts and Germany, this item amounts to 62 and 64 per cent. respectively, not including the cost of fuel and labor involved in its preparation.

In view of these facts, it appears that the balance of the wages of the working-man which must be depended upon to supply shelter, fuel, clothing and other necessaries, is small, and any means of

securing greater economy of food is of vital importance.

One of the earliest to appreciate this question was Benjamin Thompson, better known as Count Rumford, who was followed in this work by Playfair, Bernard and others; though the investigators of Voil are the most important ever conducted in this line. With the exception of the writings and work of Mr. Atchinson and Prof. Atwater, but little attention has been paid to this subject in the United States. For a better understanding of the questions involved, it must be remembered that the human body consists of fat or organic matter free from nitrogen, muscle or organic matter rich in nitrogen, inorganic matter in form of bone and water. On the other hand, human foods contain protein, carbohydrates, fats and mineral matters. The protein compounds contain nitrogen and are found in concentrated forms in meat, fish, eggs, etc. Carbohydrates including fat contain no nitrogen and are represented by butter, sugar and starch.

The chief uses of food are to form new material, repair natural wastes and further to maintain the temperature of the body and to supply it with power and energy for the work which it has to do; and for this purpose the value of food materials depends upon the amount which is digestible or capable of assimilation, for as someone has said "We live not upon what we eat, but upon what we digest." These digestible portions of food should be furnished in varying proportions, according to the climatic surroundings, occupation and health of the individual.

Prof. Voit of Germany has arranged a standard for a man at moderately hard work which contains 118 grammes of protein with carbohydrates and fats enough to produce, if burned, 3050 calories of energy; a calorie being the amount of heat required to raise 1000 grammes of water 1° Centigrade. The American standard as prepared

by Prof. Atwater is more liberal and allows 125 grammes of protein with carbohydrates and fat enough to produce 3500 calories of energy. This extra allowance is demanded from the fact that we as a nation live more intensely and work harder than the Europeans, in consequence of which we must have more nourishment. When we examine American dietaries, however, we find that they are one-sided, or in other words, that they contain an excess of carbohydrates and fat and too little protein. The great evil arising from this is, that the stomach is required to work over too large a mass of materials in order to obtain the required amount of protein, in consequence of which the digestive organs may be overtaxed and seriously impaired. This one-sidedness of our dietaries is due to three causes: that our staple grains are deficient in protein; that our meats are too fat; and furthermore that our people are not well informed as to how these foods can be most suitably combined.

It is a lamentable fact that while the wage earners of the United States are better nourished than those of Europe, they are at the same time more wasteful, though of the two forms of waste, that arising from a one-sided diet and consequent over-eating and resultant detriment to health, is even more objectionable than direct waste. From observations at the Storrs School Agricultural Experiment Station, it was found that about one-ninth of the total nutritive ingredients were wasted in the kitchen, and these were composed chiefly of protein and fats in form of meat, which is the most expensive constituent of human food.

It is a well known fact that the most costly cut of meat may be practically spoiled in cooking, and that a comparatively cheap cut may be prepared and served by a skillful cook in a palatable and

appetizing form.

To know how to prepare and serve food, is therefore of no less importance than to know how it should be combined.

The New England Kitchen in Boston furnishes an excellent example of what might be done, in the attempt to determine the best method of preparing from the cheaper food substances, nutritious and palatable dishes at low cost.

The attention of the public has become awakened to such an extent that the Secretary of Agriculture has been moved to recommend a Government appropriation of $10,000. for special investigations in this line. In fact, no question is of more importance to our nation than that of human food and its proper utilization.

Admitting, as we must, that a knowledge of how to cook and serve foods in an appetizing way and how to select a proper ratio of the various food constituents, is of the utmost importance in promoting the health and welfare of our people, the thought must impress itself upon every thinking person that a system of education for American women which does not offer a course in domestic economy is seriously at fault. It matters not whether the mistress of the household be poor or rich, or whether she employs a cook or performs her own domestic duties, whatever the circumstances may be, she should certainly understand all the details involved in the preparation of the food upon which the health and welfare of the family is so largely dependent.

Again, we must acknowledge the invaluable service of science in teaching us how to increase the production of vegetable and animal food products whereby mankind is enabled to enjoy more and better food than would otherwise have been possible; and if in this service

our Agricultural Experiment Stations have played an important part, is it not of equal importance that a portion of their energies should be devoted to the solution of the problem of human food and its most effective and economical utilization? Such a line of investigation would but supplement that already undertaken and could not but result in a service of inestimable value to mankind.

Charles Lawrence Sargent, 1894.