

every year, and which in time will surely bring to an end the slaughtering of sentient creatures for "sport," and, after that, their slaughter for food. If animal flesh were in any sense necessary for the support of human life, then the ethics of the case would be arguable; but as it has been abundantly proved by science, and by the experience of nations and of individuals, that animal flesh is totally unnecessary for the food of men, then surely it ought to be needless to argue against the murder of sentient creatures to gratify the whims of men's palates. Cowper has expressed our feelings admirably as follows:—

"The sum is this: if man's convenience, health,
Or safety interfere, his rights and claims
Are paramount, and must extinguish theirs:
Else, they are all—the meanest things that are—
As free to live, and to enjoy that life,
As God was free to form them at the first;
Who, in His sovereign wisdom made them all—
Ye, therefore, who love mercy, teach your sons
'To love it too.'"

Shakespeare wrote:

" . . . we do pray for mercy;
And that same prayer doth teach us all to render
The deeds of mercy."

"The nobler a soul is," said Francis Bacon, "the more objects of compassion it has."

[Any who may be interested to know more of the points of view set forth in this article, will find the arguments for vegetarian diet elaborated and examined, as well as a treatment of many other matters dealing with diet generally in its relation to health, in Captain Powell's Book "*Food and Health*" (Methuen and Co., 3s.-6d.)—Ed.]

FACTS *VERSUS* FALLACIES OF VEGETARIANISM.

By CAPTAIN R. MARKHAM CARTER, F.R.C.S., I.M.S.

VEGETARIANISM is a variation from the accepted system of diet that presents several points of some interest to the critic.

This system teaches that the food of man should be derived directly from the plant world. It is more than a mere dietetic program, for its followers believe that the use of animal food is morally wrong, as well as erroneous with respect to the processes of nutrition. Vegetarianism has been divided into many subvarieties each suited to the peculiar fancies of its particular exponent, and

to-day we find the civilized world contains a host of approving followers. To the mind of experts, accustomed to analyse questions of general body metabolism affecting the human race in the light of accumulated experimental observation, it is disappointing to find the majority of these leaders in the field of vegetarianism are usually unacquainted with the minute anatomy of the human body. They are as a rule untrained in physiology, and ignorant of recent researches in physiological chemistry, biology or cytology, yet capable of preaching a doctrine based on personal impressions for their equally untrained fellowmen to act upon.

The true vegetarian abstains not alone from food of animal origin, but also from tubers, and underground roots; eating only vegetables and fruits grown in the sunlight.

Others modify this parent idea, reject cereals, and live on a vegetable diet of fruit and nuts, combined with the most perfect animal food that is known milk.

Others merely exclude fish, flesh and fowl from their dietary. The intermediate graduations between these modifications of the primary idea are numerous.

The main arguments advanced by vegetarians against the use of animal food though imperfect, embrace a few ideas of a more or less scientific nature. They are as follows:—

1. An animal diet presents dangers to man from the dangers of putrefaction, the presence of germs, parasites, etc., lurking in these foods.
2. Flesh, etc., contains special substances such as creatin and the purin bases, useless to the body and often harmful to it in digestion.
3. Meat eating tends to develop the aggressive side of human nature.
4. The alimentary canal is peculiarly suited in structure to a dietary derived from plant sources.
5. Vegetable proteid fats and salts are more valuable to the body tissues than the complex food-stuffs from flesh. Further that the body utilizes these to greater advantage to itself and with less output of body energy for their conversion.

With reference to the first argument this fundamental source of objection falls to the ground when we consider that the dangers alluded to are avoidable, further that vegetable foods are by no means free from the same objection. When the vegetarian talks of dangers from an animal derived dietary, he means the dangers of ptomaine laden flesh, tubercular beef, pork injected with trichinosis, milk containing the germs of Malta fever, tubercle, infantile diarrhoea, etc.

Does he ever consider the dangers of infection from the components of a vegetable derived dietary. The lettuce leaf washed in water containing the ova of the lung and liver fluke or the parasites of amoebic dysentery; fruit and vegetables infected through the agency of insects or water with the germs of cholera, typhoid or bacillary dysentery; grain containing the spores of ergot and actinomyces. Science has shown us the channels of infection that lie around us, in the foodstuffs we are accustomed to, and the application of its teaching has closed many of the avenues through which our Indian troops have been scourged with enteric, cholera and the dysenteries. It remains but for us to apply this knowledge to our own dietary, and most of the dangers of disease through foodstuffs vanish.

As regards the second argument, one upon which they usually lay special stress as it involves a knowledge of terms, etc., denied to the majority of the laity. It is based upon the well-recognized scientific fact that the metabolites or food derivatives of digestion contain in the case of meat a high percentage of extractive substances useless or possibly dangerous to the body.

It is true that in the case of meat, we do find as the result of digestion, substances such as creatin, organic salts and the purin bases, which play an ill-defined role in the metabolism of the body, which yield but a small fraction of energy to living tissues during their successive cleavage, rearrangement of structure and oxidation. Further these bodies are mainly degraded in the body to urea and uric acid substances of known pathological interest. It is however, equally true that vegetarian foodstuffs are open to the same objections. Take coffee, tea, cocoa, common food accessories to a vegetarian diet; these contain as essentials similar purin bodies, theine, caffeine, theobromine, and it is upon these purin stimulants that the attractions of these beverages depends. The same applies to peas, beans, onions and asparagus.

The third argument is that common form of appeal indulged in by vegetarians, that meat eating as a practice tends to develop an aggressive type of character and that these traits are distinctively absent in races accustomed to the more pacific ration of rice and other cereals. It is extremely doubtful whether the temperament or physical stamina of races, are more directly controlled by their dietetic habits, than by the more potential influence of their peculiar environment. Further, any analogy drawn from comparisons between carnivorous animals preying upon others whose diet is mainly of vegetable origin are quite misleading.

When we consider the fourth argument that the human alimentary canal is structurally adapted to a vegetarian regime, we are faced with the fact that the bulk of experimental evidence by research workers, shows that the ordinary mixed diet in common use by man is admirably utilized by this alimentary canal for the maintenance of life.

Granting the fact that the nutritive demands of man are more than satisfied by his accustomed dietary, we have no convincing evidence, that any average man can live on a nutritive plane different to those of his fellows and yet sustain perfect bodily equilibrium, unimpaired mental efficiency, bodily health and vigour over a lifetime. Further we have no proofs, that a human frame maintained on a purely vegetarian scale of diet is less liable to suffer from the commoner diseases or if submitted to the test of disease or germ infection more capable of resisting these.

When considering any radical variation from an accepted diet it is advisable to remember the personal factor in the formation of dietetic habits, the force of alimentary idiosyncrasy and personal environment.

It is quite easy for the expert to arrange for a purin free dietary for a community, but whether this diet is suited to the life history of that community is another matter. Facts backed by scientific evidence alone are of value in an age of fads and dreams. Popular fallacies are often deduced from current notions and die slowly. It is not so long ago we heard the mushroom spoken of by vegetarian enthusiasts as the vegetable beefsteak. Chemical enquiry has proved these popular fungi rank far lower in comparison with ordinary fresh vegetable foods and proved that the mushroom is an unessential dietetic accessory.

In fairness to vegetarians, we must grant that with progress in the chemical preparation of vegetable foodstuffs for human digestion, each year brings forth more suitable adaptations of high nutritive value and palatability. This however is more by the concentration of utilizable vegetable nutrients, the exclusion of indigestible unutilizable residues, and the preparation of these essentials by technical processes based on recent physiological research.

We still await from those working in the cause of vegetarianism or in the common field of metabolic research proofs that the average rigid vegetarian utilizes his foodstuffs to a better advantage or more economically than his fellowman doing the same work on a mixed animal and vegetable dietary.

The practice of vegetarianism involving as it does mental concentration on the dietetic habit, ensures for the majority of

its followers a temperance in matters of diet, that is of therapeutic interest to all interested in the treatment of those metabolic disorders the result of over nutrition and similar perversions. Herein lies the germ of value of the idea.

We cannot believe that nature makes a mistake when she has ordained that the offspring of all animals should be entirely dependent at the most critical period of their existence on the milk of the parent, the most perfect animal food. Further, we note rickets and other infantile diseases result when we change this diet to one of a more vegetarian character.

Those interested in this subject have only to consider the abundant and varied mixed dietary, which as a result of living experiment and chemical research has been proved to be necessary for the maintenance of expeditions, armics, etc. The north and south poles were discovered by persons placed under altered conditions of environment requiring the most perfect balance of food elements to maintain life. When we examine the diet upon which Nansen's Arctic expedition existed for three years without sickness or scurvy we find it contains meat of various sorts hermetically sealed, dried fish, condensed milk, preserved butter, potatoes dried and tinned, all kinds of dried preserved vegetables, fruits, jam and marmalade, flour, tea, coffee, cocoa, beer, lemonade, etc. This dietary was supplemented by the fresh flesh of bears, seals, walrus and fresh fish, where opportunity occurred.

Without sufficient scientific evidence to counterbalance these facts it becomes increasingly difficult to see the entire seriousness of this question of vegetarianism.

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