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ISSN 0953-0932

£5.00 inc. postage  
Published quarterly

## Editorial

### ON MEAT

Some hae meat, and canna eat,  
And some wad eat that want it;  
But we hae meat and we can eat,  
And sae the Lord be thankit.

*The Selkirk Grace*, attributed to Robert Burns

In the eighteenth century this grace would have been said by many a Laird in his mansion in the Scottish borders before sitting down to dinner. Typically, the meal consisted of a huge quantity and variety of meats, often including beef, mutton, game and poultry, together with salmon and herring. Consumption of meat as a feature of celebrations is found in the earliest records. When Noah came out of the Ark after the flood had abated, the first thing he did was to kill some beasts, and to 'offer some burnt offerings on an altar. And the Lord smelled a sweet savour'. Homer records how, on occasions calling for a celebration, the Greeks on both sides in the Trojan war roasted an ox and thanked the god or goddess who had given them the victory. Traditional meats at Thanksgiving, Christmas and other religious feasts show that these customs persist throughout the world today.

There have always been individuals, ascetics, puritans and others, who refrain from eating meat on moral grounds, notably Brahmins and some Hindu castes. Although no Hindu should eat beef, most will eat other meats. It is poverty that requires so many Indians to be vegetarians. In Western Europe and North America an increasing number of people choose to be vegetarian, up to 4 per cent of the population in the UK but about 10 per cent avoid meat or eat it rarely,<sup>1</sup> especially young adult women. Individual motivation for avoiding meat may be aesthetic, moral or the pursuit of health. Reduction in consumption and changes in the choice of meats is driven by claims that some meats may impair health and shorten life.

How mankind acquired a great desire for meat and the reasons why so many are now having doubts about it are both fascinating subjects. *Homo sapiens* has evolved from primate ancestors as an omnivore adapted anatomically and physiologically to a mixed diet. Fossil remains of the earliest varieties of *Homo*, *H. Habilis* and *H. erectus*, two to three million years old, are found in tropical Africa. Like all primates today they would have been predominantly vegetarian, but probably got a little meat by scavenging from the kills of carnivores. About half a million years ago some of them left the tropical jungles and became dispersed throughout the five continents. In harsh winter climates *H. sapiens* could not survive as vegetarians and had to become hunters. Nowhere were their numbers great and they lived as large families or small tribes. A kill and the subsequent meat, either animal or human, was essential to survival. In historical and recent times there are many examples of men and women resorting to cannibalism when on the verge of death from starvation.

A group or tribe dependent on meat for its existence would have to defend their hunting grounds against their neighbours. Tribal wars with many casualties,

sometimes fatal would have been inevitable and were probably the main cause of death. Such wars may have been followed by the slaughter of a whole population (genocide). Genocide is peculiar to *Homo sapiens*. Diamond<sup>2</sup> gives tables listing 37 examples of genocide since the sixteenth century, 26 of them in this century with estimates to the nearest million of the number killed. Leading the list with over ten million are the Jews, gypsies, Poles and Russians killed by the Nazis in 1939–45 and the several million political opponents of the Stalin regime eliminated between 1929 and 1939. As events in Cambodia, Rwanda and Bosnia have shown, genocide continues today and our collective will expressed through the United Nations is unable or unwilling to prevent it. How did genocide, almost unknown in other animal species, come about and evolve? We do not know, but we can speculate that it arose in a small tribe seeking to preserve its hunting grounds and so ensure the meat supply essential for its survival. When communities became settled, the larger numbers favoured parasites which require a large host population and infectious diseases became the main cause of death.

While for many of our early ancestors meat was synonymous with food and necessary for survival, attitudes of mind persist when circumstances change. The words of the Selkirk grace reflect the abundant supply of mixed foods available to our more recent ancestors, and those who could afford it ate large quantities of meat. Today meat remains the main course in the dinner for most families and at formal feasts and banquets.

Meat is a good food and rich in nutrients. It supplies about half of the vitamin B12 in a mixed diet and the iron in it is much more readily absorbed from the gut than that in foods coming from plants. Throughout the world nutritional anaemias are prevalent amongst poor people who live on restricted diets with little or no meat; yet vegetarians on a good mixed diet are healthy and some of them are athletes in the top class. The Arctic explorer Stephansson and a colleague lived for a year in New York on a diet composed only of meat and maintained good health throughout.<sup>3</sup> In such a diet much of the energy comes from saturated fatty acids which may raise the blood cholesterol and so increase the risk of developing severe atherosclerosis. Hence meats of mammalian origin have come to be regarded as 'bad' foods. Fish and poultry meats contain much less saturated fatty acids and so are considered 'OK'. A number of those who have given up eating beef, mutton and pork call themselves vegetarians but are only partial ones, usually eating fish and fowl. A more important consequence of the scientific demonstration of the potential adverse effects of saturated fatty acids is that farmers now no longer fatten their beasts before sending them to market as they did formerly. Much of the flavour of meat is contained in the fat, and so the quality of meats on the market has changed; seldom now can one obtain a good fat mutton chop or a fat ham. These delicacies, if eaten only on occasions and then in moderation, can surely do little harm. Excessive attention to health enthusiasts deprive us of legitimate pleasures.

However, meats may spread disease. Helminth parasites in infected animals can pass readily to those who eat their flesh. Fortunately the diseases so caused rarely arise in people who eat meat that has been thoroughly cooked and where the carcasses of animals are inspected in the slaughter house. Prion disease is now much more in the public eye. The first of these to be recognised was *kuru*, a fatal neurological degeneration that arose in New Guinea in cannibals who had eaten human brain. The transmitting agent is a protein particle, known as a prion.

Other prion disease are scrapie in sheep, not uncommon but not known to have been transmitted to man, Creutzfeldt–Jacob disease and bovine spongiform encephalopathy (BSE) in cattle. A large epizootic of BSE occurred in British cattle in the late 1970s and early 1980s and continues to take a toll. Feeds containing contaminated sheep offal are the accepted cause. There has been no certain infection of man but we cannot be sure. BSE has received widespread publicity and has led to a ban on the import of British beef into Germany. The veterinary profession has initiated vigorous measures to control the epizootic and to ensure that no infected beef is put on the market. Present knowledge of this new and fascinating disease is well reviewed by Collee.<sup>4</sup>

Proteins provide a higher proportion of the available energy in meats than in most other foods. As protein metabolism requires the kidneys to secrete urea, it appeared reasonable to restrict protein intake in patients with kidney disease. At one time very low protein diets with no meat (the Kempner and Giovannetti diets) were prescribed for chronic renal failure, but as patients could not tolerate them for more than a few weeks they fell into disuse. A study<sup>5</sup> of 840 patients with various chronic renal diseases found a small benefit with a slower decline in renal function after the introduction of a low protein diet, but a very low protein diet did not slow the progress of advanced renal failure. One may conclude that it is proper to advise all patients with chronic renal disease to restrict their meat intake, but to ban it altogether may only deny them a simple pleasure when their lives already have enough of misery.

To return to the eighteenth century where we began. William Cullen in 1789, a year before his death, published his *Treatise on the Materia Medica*. A section entitled *Of Aliments* has an account of animal foods. The alimentary qualities of the flesh of many species of mammals and birds, both domestic and wild, and also of fish, reptiles and crustacea, are discussed. Thirty seven pages are given over to a subject of perennial interest to cooks when trying to provide tender and appetising meat for their families and for those individuals with digestive peculiarities or disorders. There is an account of the folklore associated with Scottish diets of his time, acquired from his extensive consultative practice. While Cullen's attempt to use the science of his time to explain the variations in meats and in the digestive capabilities of men and women, is now seen mostly as nonsense, a balanced appraisal today would support Cullen's conclusion:

although animal food may be admissible by the human economy; and in certain circumstances of that it may be proper and even necessary; and therefore that, in many cases, it may be consistent with health; yet that, for the most part, a small proportion of it only is necessary; that the very temperate and sparing use of it is the surest means of preserving health and obtaining long life; whilst the large use of it tends to the production of diseases, and to the aggravation of those that from other causes may come on.

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