Wild worries

In response to my recent comments on acrylamide (*PJ*, 11 January, p64), a correspondent has been kind enough to send me some other comments from a website which debunk the whole assumption that this product of the fast-food chip-pan represents a real peril to humanity.

We know that baking or frying carbohydrate-rich foods such as potatoes and cereals does produce minute quantities of acrylamide, and that the compound in question is a probable human carcinogen, judged by its effects on experimental animal. Yet no studies based on findings in human consumers have ever been published. Estimates from rodent tests have indicated that at least 500mcg per kg body weight daily for a protracted period is required to produce a slight increase in cancer incidence. Translated into human terms, this means that someone would need to consume 35,000 potato chips per day for life to induce such a result. Anyone who lived in this style would richly deserve disease and early demise.

A commentary published in *The Lancet* for 1 February has noted that when a sealant containing acrylamide was used in a tunnel on Swedish railways some workers suffered a reversible and usually mild peripheral neurotoxicity when leakage occurred, and that there was some effect on local grazing animals. However, United Nations agencies pronounced that there was no way of estimating human cancer risk from acrylamide or setting a limit for a safe exposure level, nor of designing advice about consuming it in cooked foods. The Maillard reaction, first described in 1912, which takes place during food cooking, occurs when asparagine in potatoes and cereals reacts with a reducing sugar, and is important in determining the colour and flavour of cooked foodstuffs. Acrylamide is formed during such a reaction, but not in amounts condemned as unsafe.

In the same issue of *The Lancet* a letter from food safety experts in New Zealand points out that acrylamide is used in plastic manufacture, other industrial processes and for electrophoresis in laboratories. Because it is neurotoxic and a presumed carcinogen, assessing its risk to health is important. However, the mean daily dose in eaters of hot chips and potato crisps is three orders of magnitude below the limit at which no observable adverse effect is seen in rats. Accordingly, we need have no serious misgivings that fried potatoes will kill us.

Path of destruction

The recent horrifying news of a crazy man armed with a couple of axes who wrought destruction among the treasures of Waltham Abbey reminds me of a distant experience I had regarding the same edifice. It was during an extramural course for a diploma in field archaeology, when a party of us students, supervised by a professor, were making a study of some features of the Epping Forest region, and making field surveys of objects ranging from earthworks to ancient buildings. Waltham Abbey, or rather its medieval precincts, came within the orbit of our measurements, and we set out one fine day with tape measures and measuring rods to work on an ancient outwork of the early Saxon walling of the vicinity.

It is necessary in surveying to set out a baseline from which to make measurements, and this involved driving six-inch nails into available crevices and joining them with strings maintained in the horizontal by spirit levels. From this level measurements of the structures were made with metre rules.

Now, there is a strict rule that edifices must never be damaged by driving nails into solid parts of the fabric. So much is elementary conservation, and we were careful to avoid damaging anything. We were alarmed, however, during the afternoon to hear shouts and voices raised in anger not far away. In going to discover the cause we found another section of our class confronting a couple of irate churchwardens from the abbey. What had happened was that some ill-advised student had started to hammer a nail for his baseline string into a solid block embedded in the abbey nave. The disturbance had alarmed the two wardens, who were guiding a party inside the nave, and naturally they had rushed out to confront the offender.

Our poor professor was greatly embarrassed, but produced his credentials from the university, showing that permission for the survey had been authorised. Of course, he was full of apologies for the lapse, which had not been foreseen, and so far as I know there were no subsequent troubles and no perceptible damage in the long run. During the evening, however, back at our expedition headquarters, we were warned solemnly against the hazards of archaeological investigations of ancient structures that might be occupied, permanently or temporarily.

Successful ageing

In the *Journal of the American Medical Association* for 13 November 2002 is a report of work undertaken for the New England Centenarian Study recently. Its author, M. J. Friedrich of Boston, comments that culture in the United States is permeated by a mania for staving off the signs of the ageing process and for clinging to youth as long as possible, even to the extent of undergoing strange operations to remove the ravages of time. However, research is now suggesting that "the inexorable march toward the end of life need not be a steady decline" as has often been assumed. Many centenarians have been found to have remained hale and hearty well into their 90s, delaying the onset of age-related diseases and compressing any period of illness into a brief period at the end of life.

Data obtained from a group of centenarians from eight towns in the Boston area have shown that the group in question is far healthier cognitively and physically than had been thought. About 90 per cent were still functioning independently to an average age of 92 years. Healthy cognitive functioning was a better predictor of continued independence than was physical health. Neuropsychological evaluation indicated that one third of the group did not suffer dementia despite the general opinion that the prevalence of Altzheimer's disease increases with growing velocity in an ageing population. The experts argue that keeping the brain active has an effect in increasing a person's reserves of cognitive power. Moreover, centenarians appear to have avoided, delayed or survived many chronic illnesses that affect the rest of the population, such as heart disease, strokes, diabetes and cancers. Many have delayed such diseases until the age of 85 or later, and a similar proportion have developed them before they were 65, but have survived their onslaught.

The observation that children of centenarians show a lower mortality rate than do other comparable groups has suggested a familial component. Members of this group tend to weigh less and have a lower body mass index, so that fat metabolism may play a role in such longevity. Thus, a genetic component may play an important role in living to an exceptional age. It may be a combination of a group of protective genes and the absence of certain risk-producing genes. Although environmental factors also play their part, healthy lifestyle may be less important than favourable genetic makeup in ensuring prolonged life.