

COMMENTARY

by Bernard Dixon

THE OUTSIDE WORLD PEERS IN ON BIOTECH



Not favourably viewed by the anti-vivisection lobby." I do not recall ever having come across those words before—or anything like them—as part of a highly technical research paper. But there they were, at the very beginning of a paper presented in Berlin to the 2nd World Congress on Foodborne Infections and Intoxications. The authors were Jack Melling and his colleagues

at the PHL Centre for Applied Microbiology (Porton Down) and Porton International Ltd. Their subject was the mouse lethality test used to detect *Clostridium botulinum* toxins, which they believe can be replaced by an ingenious enzyme-linked immunosorbent assay (ELISA) they have devised over recent years.

A conference devoted to the wholesomeness and occasional harmfulness of food might, of course, be expected to pay more than passing attention to the world outside the laboratory walls. In this domain we all count as consumers whose predilections are of immediate practical concern to bakers, brewers, butchers, and all of the other professionals whose products comprise our diet. For me, nevertheless, the Berlin conference was unprecedented for the force with which social and political factors influenced a huge but otherwise unremarkable gathering for the exchange of research data. Professor Melling's comment was just one of several significant signals from a cabal of scientists who were looking over their shoulders with varying degrees of apprehension and concern.

Take food irradiation. "From the public-health point of view, radiation-pasteurisation of chicken meat offers a unique method for pathogen disinfection and for shelf-life extension, without impairing eating quality. The effect is achievable at a low dose level, well within the already rigorous safety limits. It is this particular aspect which will no doubt result in wider use of irradiation," wrote one Israeli group in its conference preprint. "Canada being a world leader and an exporter of nuclear technology, we feel that food irradiation offers excellent promise and we plan to direct our efforts towards facilitating the use of the process and enhancing the consumer's confidence in its safety and efficiency," was the confident comment in a paper from Agriculture Canada, Ontario. "Hopefully, legislation to permit such treatment of food will be introduced in the United Kingdom in the near future to provide a safeguard for poultry meat," added a contribution from the Communicable Diseases (Scotland) Unit in Glasgow.

But all of these words were composed *before* the Berlin Congress, which took place only several weeks *after* the nuclear reactor disaster at Chernobyl in the Soviet Union. As a result there was general, undisputed but gloomy agreement that the protection of foodstuffs by irradiation has been banished from the agenda for many years in all of those countries that have not yet introduced the technique. Although they placed the blame not on Chernobyl

per se but on public ignorance and media misrepresentation, many speakers drew a more decisive conclusion. One, unconsciously matching his metaphor to his audience, described food irradiation as "a dead duck for all time."

Another strand running throughout the proceedings, held amidst the hyper-efficient ambience of Berlin's space-age International Congress Centre, was the conflict between food safety measures and the demands of organic eaters. Again and again, speakers described incidents in which people had become ill as a direct consequence of their preference for untreated ingredients and unadulterated foods—particularly those of the traditional variety. Last November in the Vaud canton of Switzerland, for example, troops and then civilians became ill with high fever, vomiting, and diarrhoea. Suspicion soon focused upon "Mont d'Or" vacherin cream cheese, which was later found to have been contaminated with *Clostridium* from a pigsty near the cheese factory. It was not until after this outbreak that the raw milk formerly used to make vacherins began to be heat-treated. For some customers, however—whether local people or city gourmets—this was a retrograde step from purity towards the synthetic world of science.

Equally striking evidence came from a team of bacteriologists at the Scottish Home and Health Department in Edinburgh. Three years ago, legislation was enacted in Scotland requiring all milk on sale to the public to be heat-treated—but with three exceptions. A few remote communities, lacking the necessary pasteurisation equipment, were exempted. So, too, was goat and sheep milk, and any milk given to farm employees free or in part payment of their wages. In the two latter cases, belief in the greater goodness of the raw stuff was and is strong among the consumers. The facts are now abundantly clear. During the three years before compulsory pasteurisation began, there were seven outbreaks of milk-borne salmonellosis (affecting 55 people) in farming communities and 14 (affecting 1091 people) in the general population. During the three years since the change, there have been 15 outbreaks (affecting 100 people) in the farming community and none in the population at large. The Edinburgh bacteriologists are now hopeful that statutory action will deal with the remaining problem. But their efforts are not going unresisted.

So to Professor Melling and his colleagues. They have good technical reasons for replacing the mouse lethality test for *C. botulinum* toxins A and B. It requires large numbers of animals and can be made specific only by parallel toxin neutralisations. The monoclonal antibody-based amplified ELISA is quicker, cheaper, and almost as sensitive. Yet the Porton workers found it necessary to list as a further virtue the test's acceptability to animal rights campaigners. They were not alone, among speakers describing new techniques, in highlighting this concern. The outside world, I think, is getting to scientists as never before.

Bernard Dixon, Ph.D., is a contributing editor of *Bio/Technology*.