

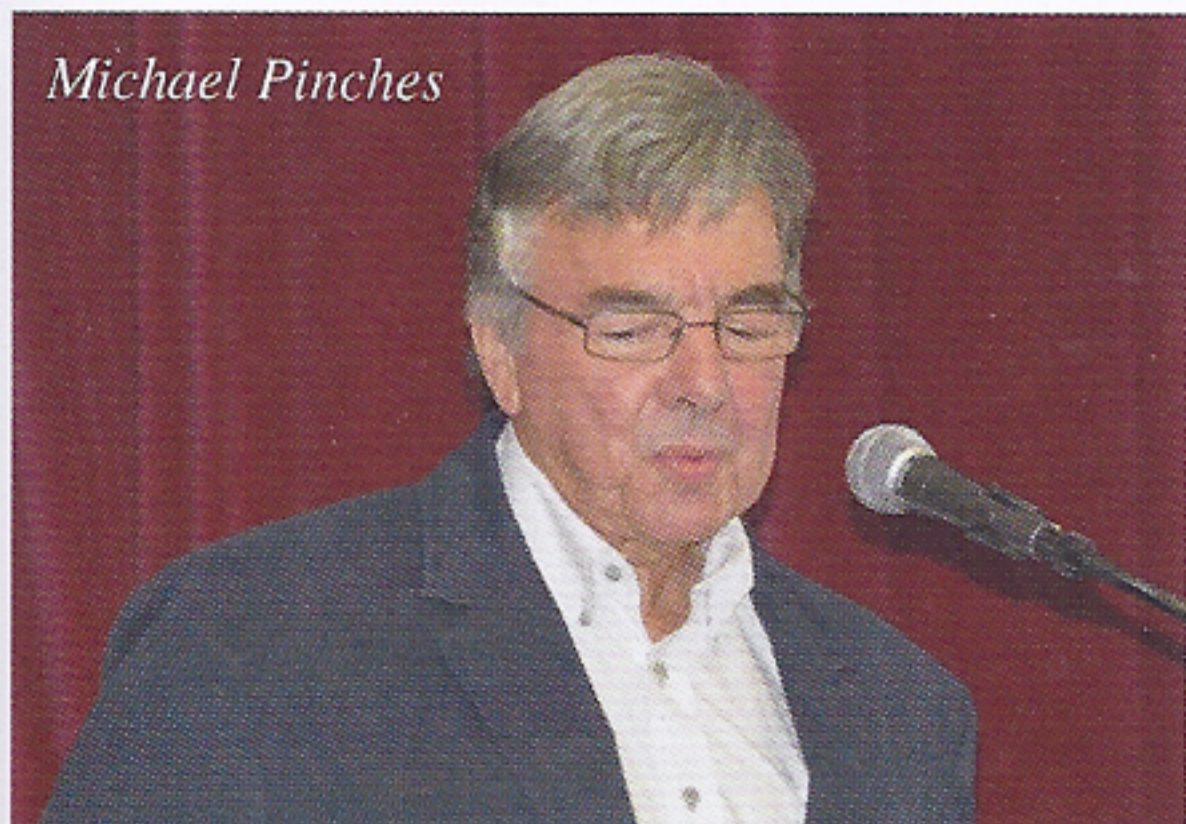
Cheese industry challenges

The Society of Dairy Technology held its symposium, followed by an annual dinner, on 25 July. The topic was cheese industry challenges, ranging from starter culture issues to Brexit to whey products.

Michael Pinches of Dupont discussed the development of starter supply systems, from frozen pints to direct vat inoculation (DVI) cultures. Most cheese flavour is derived through protein breakdown, primary proteolysis by chymosin, plasmin and other coagulants followed up by proteases and peptidases from both starter and non-starter lactic acid bacteria (LAB), where additional aminopeptidase activity helps to remove bitter peptides. Non-starter LAB can be added to traditional culture blends.

In soft cheeses, the rate of proteolysis can affect starter growth and similar considerations apply in blue cheese starters. In surface mould-ripened cheese such as Camembert, balance within the surface growth is important, so increasing the level of *Geotricium candidum* with less *Penicillium candidum* leads to a thicker coat and longer shelf life.

Bacteriophages still present the biggest risk to starters. These viruses attack bacteria and are one-hundredth the size of starter microflora, and they multiply faster. Good manufacturing practice is essential, backed up by culture rotation, since bacteriophages can mutate and evolve. Rotation of two unrelated cultures combined with good hygiene can



Michael Pinches

The Society of Dairy Technology tackled diverse issues affecting cheese in its symposium in Nantwich, UK.
Andrew Wilbey reports

work in achieving a reduction in phage counts between cheese making sessions. Hypochlorite is good as a disinfectant but is corrosive. Defined multiple starter (DMS) cultures have been produced by selecting 64 strains by genome sequencing, then using 10 strains per starter while avoiding antagonism. DMS cultures can be used in a starter rotation and are resistant to phage attack.

CRISPR, a bacteriophage resistance mechanism, works with *Streptococcus thermophilus* in thermophilic culture systems. This is a form of inoculation to increase resistance to bacteriophage attack and makes cultures much more resistant. It is not genetic modification but a form of adaptation.

Brexit and the cheese industry

Andrew Kuyk CBE, director general of the Provisions Trade Federation, reviewed Brexit and how it might affect the cheese industry. Article 50 makes no mention of financial arrangements and there is no mention of withdrawal of the notice. The current UK stance is that the UK leaves the single market and customs union as well as the European Court of Justice. The EU has key issues of people, money and the border with Ireland. They also specify that "a non-member of the union cannot have the same rights and enjoy the same benefits as a member," claiming that the four freedoms of the single market are also indivisible and that there can be no cherry-picking or sector-specific deals.

Food may be viewed as a special case. The UK imports over 40 per cent of its food, with about 29 per cent from the EU. The main reason is closeness but there



Andrew Kuyk

are also tariff barriers that currently make food from outside the EU more expensive. Within the UK food industry there is also a relatively high dependency on EU labour. International ownership of companies could add another complication.

Before joining the European Economic Community, UK prices were largely at world price levels and a subsidy went to farmers, whereas the EC system had higher food prices and support by intervention purchases and common external tariffs. In terms of regulation, the UK has been active in formulating EU food regulations, so significant divergence is neither needed nor likely in the short term.

If the UK were to move to World Trade Organisation terms overnight there would be major disruption but there are opportunities for trade with the rest of the world. There is a huge potential middle-class market in Asia-Pacific for dairy products though the EU is also after these markets.

Cheese is the major contributor to UK dairy trade, primarily with other EU countries. Of these, Ireland is both the UK's major export customer and supplier of cheese. It is thus in both parties' interests to have a level playing field in terms of regulation and the freest possible terms of trade, both inside and outside the EU. **DiI**